

>> LET US BUILD A PC FOR YOU

CHOOSE YOUR PROCESSOR SPEED, HARD DRIVE
AND MULTIMEDIA SPEAKERS. JUST CALL US



Digital Pro

Presario 8000T-2.2

\$1699[†]

As low as \$48 per month[†]

Intel® Pentium® 4 Processor 2.20 GHz
Microsoft® Windows® XP Home Edition
256 MB PC2100 DDR SyncDRAM
40.0 GB (7200 rpm) UltraDMA Hard Drive¹
16X DVD-ROM Drive²
24X CD-RW Drive³
56K ITU V.90 Modem⁴
Integrated 10/100 Network Interface Card
Soundmax II Digital Audio
JBL Platinum Speakers with Digital Audio Port
64 MB SDR nVidia GeForce2 MX200 with TV-Out
Compaq CV735 17" Monitor (16.0" VIA)
Six Months of AOL Internet Access Included⁵

Personalize by choosing:

512 MB SyncDRAM: Add \$100
Compaq CV935 19" Monitor (18.0" VIA): Add \$140



Power User

Presario 8000T-2.0

\$1399[†]

As low as \$39 per month[†]

Intel Pentium 4 Processor 2.00 GHz
Microsoft Windows XP Home Edition
256 MB PC2100 DDR SyncDRAM
40.0 GB (7200 rpm) UltraDMA Hard Drive¹
16X DVD-ROM Drive²
24X CD-RW Drive³
56K ITU V.90 Modem⁴
Integrated 10/100 Network Interface Card
Soundmax II Digital Audio
JBL Platinum Speakers with Digital Audio Port
64 MB SDR nVidia GeForce2 MX200 with TV-Out
Compaq CV735 17" Monitor (16.0" VIA)
Six Months of AOL Internet Access Included⁵

Personalize by choosing:

CD-R Media 25-Pack: Add \$15.99
Monsoon MH-350 Speakers with Subwoofer: Add \$54



Family Champion

Presario 5000T-1.8

\$1029[†]

As low as \$29 per month[†]

Intel Pentium 4 Processor 1.80 GHz
Microsoft Windows XP Home Edition
256 MB PC1200 DDR SyncDRAM
40.0 GB (5400 rpm) UltraDMA Hard Drive¹
48X Max CD-ROM Drive⁶
56K ITU V.90 Modem⁴
Integrated 10/100 Network Interface Card
Soundmax II Digital Audio
JBL Platinum Speakers with Digital Audio Port
32 MB nVidia M64 Pro
Compaq CV535 15" Monitor (13.8" VIA)
Six Months of AOL Internet Access Included⁵

Personalize by choosing:

Microsoft Windows XP Pro: Add \$99
24X CD-RW Drive³: Add \$119



Power User

Presario 2700T-1.0

\$1599[†]

As low as \$45 per month[†]

Mobile Intel Pentium III Processor 1.00 GHz-M
Microsoft Windows XP Home Edition
15.0" TFT XGA Active Matrix Display
256 MB 133 MHz SyncDRAM
30.0 GB UltraDMA Hard Drive¹
8X DVD-ROM Drive²
ATI Mobility Radeon™ with 4X AGP and 16 MB
Dedicated Video Memory
56K ITU V.92 Modem⁴ with Network Interface Card
Lilon Battery
IEEE-1394 Port

Personalize by choosing:

32 MB Dedicated Video Memory: Add \$99
8X CD-RW FutureBay™ II Drive³: Add \$175



Jet Setter

Presario 1700T-1.0

\$1399[†]

As low as \$39 per month[†]

Mobile Intel Pentium III Processor 1.00 GHz-M
Microsoft Windows XP Home Edition
14.1" TFT SXGA+ Active Matrix Display
256 MB 133 MHz SyncDRAM
15.0 GB UltraDMA Hard Drive¹
8X DVD-ROM Drive²
ATI Mobility Radeon with 4X AGP and 8 MB
Dedicated Video Memory
56K ITU V.92 Modem⁴ with Network Interface Card
Lilon Battery
IEEE-1394 Port

Personalize by choosing:

Additional Lilon Battery: Add \$99
DVD/CD-RW Combo Drive: Add \$225



Road Warrior

Presario 2700T-933

\$1299[†]

As low as \$37 per month[†]

Mobile Intel Celeron™ Processor 933 MHz
Microsoft Windows XP Home Edition
15.0" TFT XGA Active Matrix Display
128 MB 133 MHz SyncDRAM
20.0 GB Hard Drive¹
24X Max CD-ROM Drive⁶
ATI Mobility Radeon with 4X AGP and 16 MB
Dedicated Video Memory
56K ITU V.92 Modem⁴ with Network Interface Card
Lilon Battery
IEEE-1394 Port

Personalize by choosing:

Upgrade to 8X DVD-ROM Drive²: Add \$75
Presario 2700T QuikDock: Add \$149

Compaq PCs use genuine Microsoft® Windows®
www.microsoft.com/piracy/howtotell

> To buy direct from Compaq in Puerto Rico, call toll-free 1-800-668-5341. > Para comprar de Compaq directamente en Puerto Rico, llame gratuitamente al 1-800-668-5341.

[†]All prices shown are Compaq Direct selling prices and do not include applicable sales tax and shipping, are valid in the U.S. only, and are subject to change or cancellation without notice. Illustrations may not accurately represent exact configurations priced. Retail prices may vary. Compaq purchases billed directly to your account. However, there is an access check fee of 3% of the U.S. dollar amount of each advance check (\$5 min./\$30 max.). ¹For hard drives, GB=billion bytes. ²16X DVD-ROM drives read a minimum of 5545 Kbps and a maximum of 21640 Kbps (for the best performance); for reading CD media, the max transfer rate may be up to 6000 Kbps. Actual transfer rates may vary depending on media quality. ³ITU V.90 modems are designed only to allow faster downloads from K56flex- or V.90-compliant digital sources. Maximum download rates may vary. ⁴For hard drives, GB=billion bytes. ⁵Available only to new members in the U.S., age 18 or older, and a major credit card or checking account is required. ⁶48X Max CD-ROM data transfer rates may vary from 2500 to 7200 Kbps. ⁷8X DVD-ROM drives read a minimum of 4463 Kbps and a maximum of 19200 Kbps. ⁸24X Max CD-ROM data transfer rates may vary from 1500 to 3600 Kbps. Microsoft® Windows® XP Home Edition installed. Compaq, the Compaq Logo, Inspiration Technology, Presario, and FutureBay are trademarks of Compaq Information Technologies Group, L.P. ©2001 Compaq Information Technologies Group, L.P. 0975/02/02 America Online and AOL are registered service marks of America Online, Inc. Products and company names mentioned herein may be trademarks and/or registered trademarks of other companies.

Copyrighted material

IVE, MEMORY, AND MORE. THEN ADD OPTIONS LIKE DIGITAL IMAGING CAPABILITIES, DVD TECHNOLOGY,
OR VISIT OUR WEBSITE.



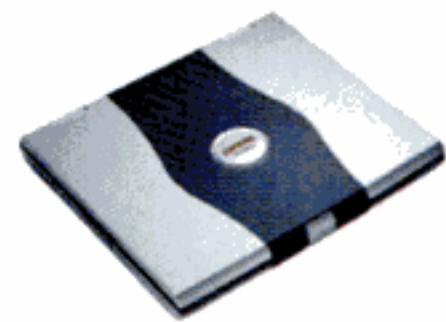
Whiz Kid

Presario 5000T-1.7

\$899[†]

As low as \$26 per month*

Intel Pentium 4 Processor 1.70 GHz
Microsoft Windows XP Home Edition
128 MB PC1200 DDR SyncDRAM
20.0 GB (5400 rpm) UltraDMA Hard Drive¹
48X Max CD-ROM Drive²
56K ITU V.90 Modem³
Integrated 10/100 Network Interface Card
Soundmax II Digital Audio
JBL Platinum Speakers with Digital Audio Port
32 MB nVidia M64 Pro
Compaq CV535 15" Monitor (13.8" VIA)
Six Months of AOL Internet Access Included⁵
Personalize by choosing:
16X DVD-ROM Drive²: Add \$39
Compaq CV735 17" Monitor (16.0" VIA): Add \$50



Road Scholar

Presario 1700T-933

\$1099[†]

As low as \$31 per month*

Mobile Intel Celeron Processor 933 MHz
Microsoft Windows XP Home Edition
14.1" TFT XGA Active Matrix Display
128 MB 133 MHz SyncDRAM
15.0 GB UltraDMA Hard Drive¹
24X Max CD-ROM Drive²
ATI Mobility Radeon with 4X AGP and 8 MB
Dedicated Video Memory
56K ITU V.92 Modem³ with Network Interface Card
Lilon Battery
IEEE-1394 Port
Personalize by choosing:
Compaq Carrying Case: Add \$39
8X DVD-ROM Drive²: Add \$70

MyMovieSTUDIO. JUST \$499.

Create and share your own home movies. Add MyMovieSTUDIO to your Compaq Presario Desktop PC. The editing software and easy access ports for digital cameras and camcorders will make it simple to produce quality films.

Just plug in and edit. It's that easy. Connect your camera into the easy access ports to download your home videos onto your PC. Then edit your footage with Studio DV software. You can save your movie onto your hard drive, or burn it onto a DVD using your DVD-R/RW & CD-RW combo drive.

It's a blockbuster. You can play your movie on most DVD players. So gather your family and friends, pop it in, and wait for that Best Picture nomination.

THE NEW MOBILE INTEL PENTIUM III PROCESSOR—M.

Rev it up. The new Mobile Intel Pentium III Processor—M has been clocked at speeds up to 1.20 GHz. Plus, the 512 KB cache stores twice the data as before to give you quicker access to programs. So buckle up.

Power on. This innovative new chip supports Deeper Sleep and Enhanced Intel SpeedStep™ technology, which means it conserves power every chance it gets. That prolongs your battery life so you can keep going.

Get on the fast track. What are you going to do with all that power? Run bigger programs, like DVDs and games. You'll have richer graphics, too. So order your Compaq Presario Notebook with Mobile Intel Pentium III Processor—M today. And more power to you.

Compaq is not liable for editorial, pictorial, or typographical errors in this advertisement. *Financing on approved credit by arrangement with Compaq Financial Services through MBNA America Bank, N.A. Payment based on a 48-month term at 14.99% APR. Your APR may be higher. There is no fee on Kbps. ¹24X CD-RW drive data transfer rates may vary as follows: for recording to CD-R media, the max transfer rate may be up to 3600 Kbps (use 24X or higher discs for best performance); for writing to CD-RW media, the max transfer rate may be up to 1500 Kbps (use 4–10X high-speed media). Achievable download transmission rates are currently unknown, may not reach 56 Kbps, and will vary with line conditions. ²Six Months of AOL Internet Access included offer valid on the purchase of a Compaq Presario 5000T and 8000T PC between 10/15/01 through 05/01/02 direct from Compaq. ³As including in AK, even during promotional period. Members may incur telephone charges on their phone bill, depending on their location and calling plan, even during promotional period. Acceptance of the applicable AOL Internet Access agreement is required. Please see agreement for details at 8820 Kbps. ⁴8X CD-RW drive data transfer rates may vary as follows: for recording to CD-R media, the data transfer rate may vary from 150 to 1200 Kbps; for writing to CD-RW media, the data transfer rate may vary from 150 to 600 Kbps; for reading to CD media, the data transfer rate may vary from 150 to 600 Kbps. ⁵Compaq, L.P. in the U.S. and other countries. Intel, the Intel Inside Logo, Pentium, Celeron, and Intel SpeedStep are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the U.S. and other countries. Microsoft, MSN, and Windows are registered trademarks of Microsoft Corporation.



PC SHOWDOWN

We rate and review 9 rigs from renegade vendors

3D SPLendor

Aquanox & Ballistics: Prettiest games ever?

2.2GHz P4

We lab-test Intel's new, improved CPU



HACK YOUR TIVO

Increase your recording time in 5 simple steps!

MAXIMUM PC

MINIMUM BS

FEBRUARY 2002

HEAL YOUR PC!

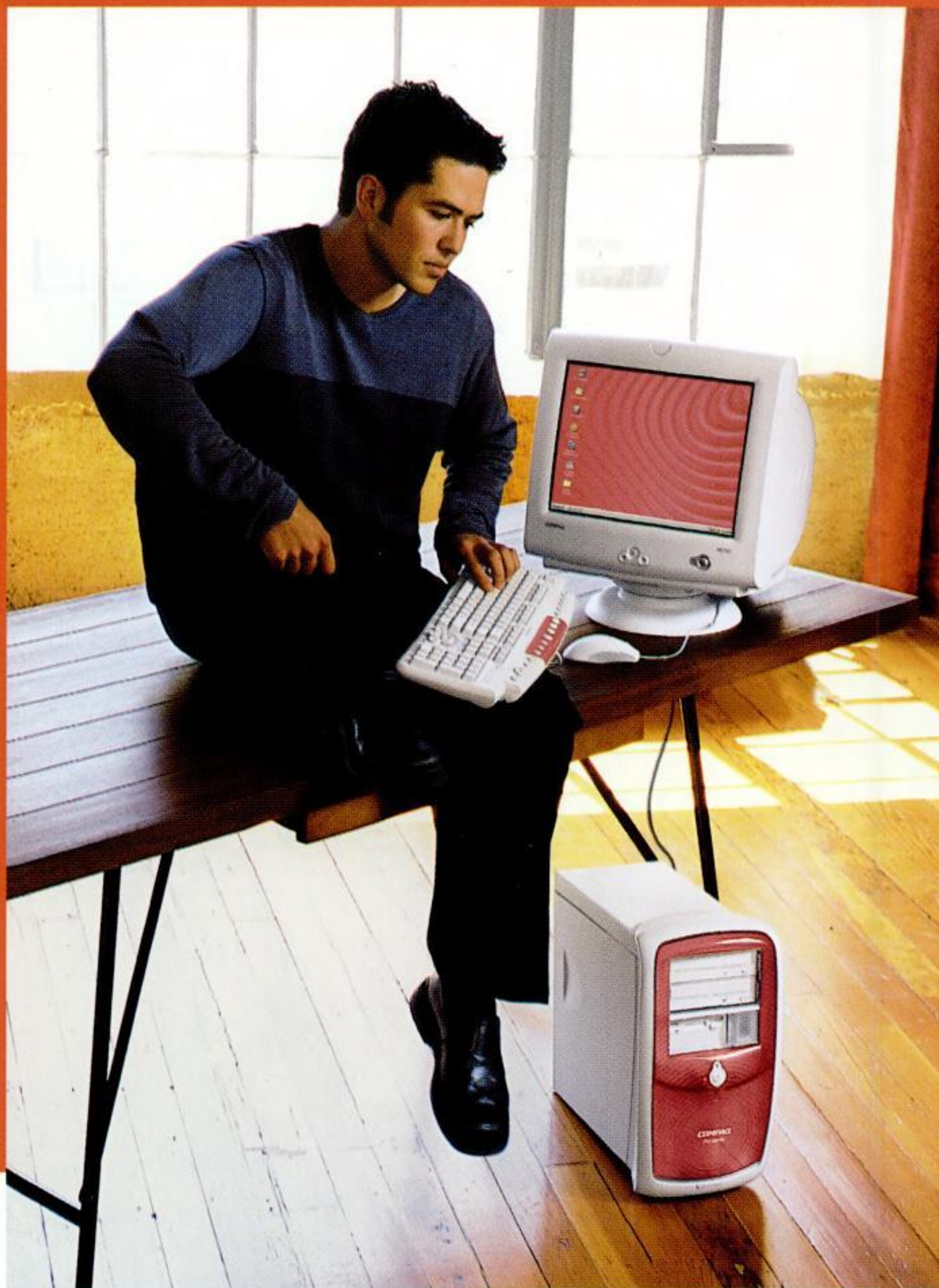
38 utilities and tools to wipe out all your PC woes



FIX YOUR CRASHES, STALLS AND CONFLICTS — NOW

Copyrighted material

BODY
BY COMPAQ.



SOUL BY YOU.

COMPAQ
Inspiration Technology



◀ One of these Compaq Presario PCs is right for you. Take a look inside.

It says Compaq on the outside. But on the inside, it's all about you. The Compaq Presario PC. Let us build one to your specifications. With your choice of powerful Intel® processors. A CD-RW drive so you can put your own soulful mix on CD. And enough storage space to hold whatever your heart desires. Let the spirit move you. Call us direct and order today.

This One



43LH-GCL-L45A

toll - free

➤ Buy direct from Compaq

1-800-819-9529

compaq.com/athome

THE GRITTY REALITY OF WAR IS IN YOUR SIGHTS

- 0600 Parachute behind enemy lines,
take out radar
- 0800 Command squad in beachhead assault
- 1000 Fly Cobra attack helicopter to
soften up enemy positions
- 1300 Drive civilian vehicle through checkpoint
- 1500 Pilot and command a platoon of
M1A1 tanks to take enemy stronghold
- 1800 Go covert with sniper rifle to
assassinate enemy commander



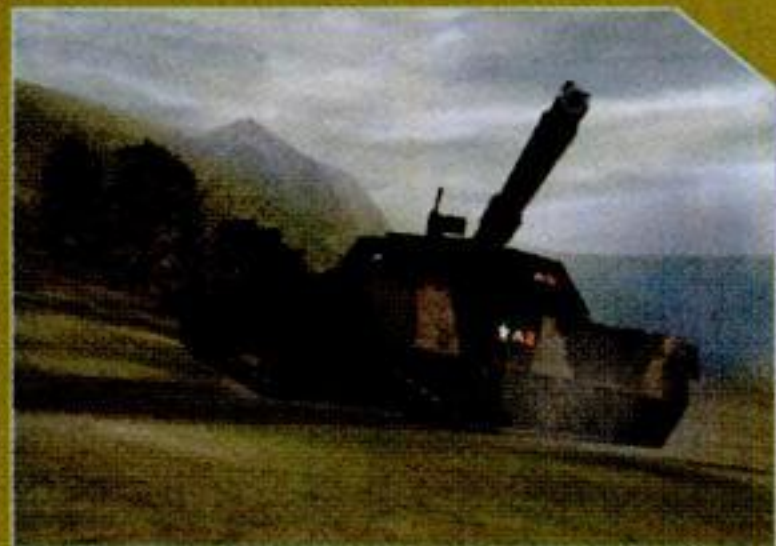
Go to war in the most realistic combat experience ever, engaging in single-player and squad-based, non-linear campaigns.



Operate over 30 authentic military and civilian vehicles, plus aircraft in immense 3-D environments totaling 100 square km.



Create and share missions with the built-in Mission Editor and wage war online in multiplayer action via LAN or Internet.



"...so gripping,
it could be
a contender
for Game
of the Year."

4.5 / 5

COMPUTER
GAMING WORLD



Blood
Violence

© 2001 Bohemia Interactive Studio and The Codemasters Software Company Limited ("Codemasters"). All rights reserved. "Codemasters" and the Codemasters logo are registered trademarks owned by Codemasters. "Operation Flashpoint" and "GENIUS AT PLAY" are trademarks of Codemasters. Developed by Bohemia Interactive Studio. Published by Codemasters. The ratings icon is a registered trademark of the Interactive Digital Software Association. All other copyrights or trademarks are the property of their respective owners.



**OPERATION FLASHPOINT:
GOLD EDITION™ UPDATES
THE CRITICALLY
ACCLAIMED #1
BEST-SELLER WITH:**

- » 20 new Russian missions
(*Red Hammer™* campaign)
- » 7 new single-player and
multiplayer missions
- » New weapons, including
HK G36 and Steyr Aug
- » New vehicles, including
Kivoa and MI63 Vulcan
- » Improved multiplayer
features

"Who knew
the Cold War
could be this
much fun?"

4.5 / 5

**COMPUTER
GAMES
MAGAZINE**

"Buy now,
play often."

9.5 / 10

**GAME
INFORMER**

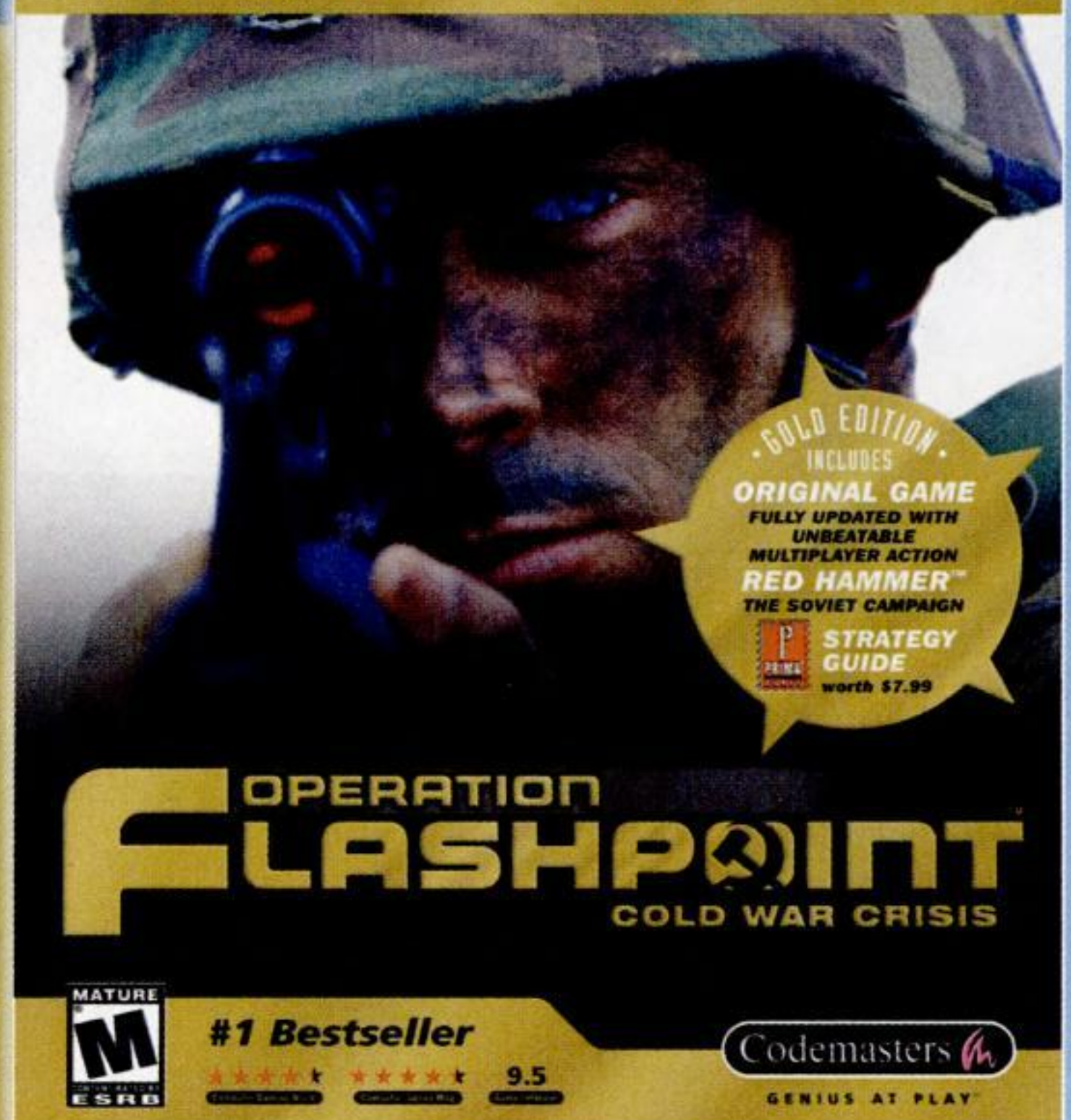
CODEMASTERS.COM

Codemasters® 

GENIUS AT PLAY

 **Bohemia
Interactive**
STUDIO

GOLD EDITION



GOLD EDITION
INCLUDES
ORIGINAL GAME
FULLY UPDATED WITH
UNBEATABLE
MULTIPLAYER ACTION
RED HAMMER™
THE SOVIET CAMPAIGN
 **STRATEGY
GUIDE**
worth \$7.99

**OPERATION
FLASHPOINT**
COLD WAR CRISIS

MATURE

ESRB

#1 Bestseller

★★★★★ ★★★★★

9.5

Codemasters® 

GENIUS AT PLAY™

>> **shop.kingston.com**

**GIVE YOUR LAPTOP
MORE GET UP AND GO**



**128MB modules
starting at**

\$20*

SHOP

FAST

EASY

SECURE



 **Kingston**
TECHNOLOGY

*Promo pricing established as of ad release date. Pricing may change due to market conditions.
Additional restrictions apply. Visit shop.kingston.com for details.



17600 Newhope Street, Fountain Valley, CA 92708 USA (714) 435-2600 Fax (714) 435-2699 © 2001 Kingston Technology Company, Inc. All rights reserved. All registered trademarks and trademarks are the property of their respective owners.

Copyrighted material

Release Notes



Put Your Videocard to the Test!

Take a look at pages 20 and 21. C'mon, humor me. Just do it. Back again? Great. Now ask yourself: Can you believe you once played *Wolf-3D* and actually thought it was the best thing since mustard in a squeeze bottle? Hoo-wee, how times have changed! Today, the graphics in *Wolf-3D* couldn't earn third place in a high-school science fair. But back then? We felt like we were navigating through a state-of-the-art military simulator.

And *Wolf-3D* was fun too, which just goes to show that gameplay *does* matter—and this is ever-more obvious in February 2002, a month in which we get to witness a very intriguing nexus of 3D gaming technologies.

On one side of the nexus we have *Aquanox* and *Ballistics*, two games that boast state-of-the-art 3D visual effects, care of DirectX 8 and the programmable pixel and vertex shaders built into the nVidia GeForce3 and ATI Radeon 8500 video chipsets. These two titles are absolutely, unequivocally, 100 percent gorgeous, replete with bump-mapping, reflections, refractions, and motion blurs that just weren't feasible at acceptable frame rates with last-generation technology.

But *Aquanox* and *Ballistics* aren't all that deep once you get past the stunning visuals. Sort of like having a supermodel girlfriend who begins to bore you once those two hot weeks in Paris are over.

On the other side of the nexus we have *Return to Castle Wolfenstein*, a game with incredibly satisfying gameplay, but rendered with last-generation technology. Don't get me wrong, *RTCW* is a visual orgy, but it doesn't look dramatically different than other games based on the Quake 3 engine. Nonetheless, I'd still rather spend a rainy Sunday afternoon with *RTCW* than with either *Aquanox* or *Ballistics*. Like all other games from id Software, *RTCW* has incredible depth and is addictive from beginning to end.

RTCW shows just what an id-supported developer (Gray Matter) can do with last year's engine, but one can only dream at what the future will bring. Raven Software, a long-time id partner, is currently working on *Quake IV*. Simultaneous to this, id itself is working on *Doom III*. Both games will use id's new Doom engine, which, when completed, will most assuredly be the best showcase of programmable shader power ever (we should expect nothing less from Carmack and company). You might have to wait until 2003 to play both games, but when their times arrive, we suspect they'll offer the best in both uncompromised 3D visuals *and* compelling gameplay.

In the meantime, if you happen to own a GeForce3 or Radeon 8500, give either *Aquanox* or *Ballistics* a chance, even if you don't consider yourself a gamer. No other games expose the computational power of modern PCs quite so vividly.

— JON PHILLIPS

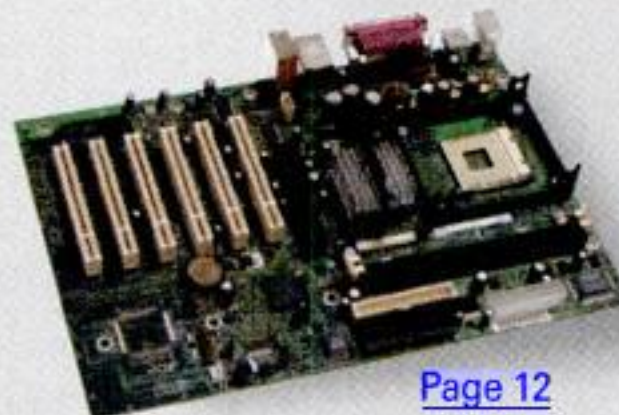
Contents

February 2002

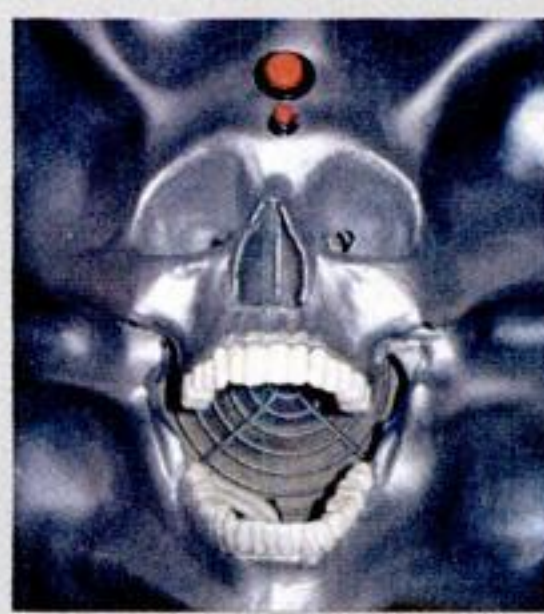
MAXIMUM PC



Page 20



Page 12



Page 96

REGULARS

8 In/Out

We do our best to answer your most pressing questions about PC technology, the magazine, and the staff.

12 Quick Start

PC previews, news, factoids... and Intel finally goes DDR.

20 Head2Head

We take a look at the *Wolfenstein* games, then and now, to see if the sequel lives up to the quality of its predecessor.

23 Watchdog

The Deskstar drama continues; a reader is fed up with restocking fees; and Princeton is lost and found.

54 Ask the Doctor

This month: ACR explained; an overclocking attempt gone awry; and even more on Windows XP.

58 How To...

Hack your TiVo PVR and gain almost five-times the amount of TV storage that came with the device.

96 Rig of the Month

Now that's a PC with some teeth!

REVIEWS

Dell Inspiron 8100 notebook **64**

Devastator 9908 arcade controller **65**

HP dvd100i CD/DVD burner **66**

Bantam BA350 MP3 player **67**

Wizcom QuickLink Pen **68**

C-Technologies C-Pen 800C **68**

Iris Irispen II Executive **68**

Sure Thing CD labeler **69**

AfterBurner CD labeler **69**

U.Are.U Personal fingerprint recognition **70**

Face Lock security software **70**

Derive 5 vector calculus software **71**

Adobe Illustrator **10 72**

Return to Castle Wolfenstein **74**

Four mini game reviews **75**



Page 68



Page 75



Page 65

THIS
CHANGES
EVERYTHING™

8500

RADEON™



Brand yourself a warrior with the incredibly fast 64MB DDR, high-resolution 3D graphics of RADEON™ 8500. Get the most out of today's hottest 3D games and experience the most immersive 3D gaming imaginable. RADEON™ 8500 changes everything.



ATI.COM

Copyright 2001, ATI Technologies Inc. All rights reserved. ATI, RADEON and This Changes Everything are trademarks and/or registered trademarks of ATI Technologies Inc. All other company and/or products names are trademarks and/or registered trademarks of their respective owners.

Copyrighted material

MAXIMUM PC
**KICK
ASS**
PRODUCT

FEBRUARY 2002

EDITORIAL

Jon Phillips EDITOR-IN-CHIEF
Katherine Stevenson MANAGING EDITOR
Gordon Mah Ung SENIOR EDITOR
Will Smith TECHNICAL EDITOR
Logan Decker FEATURES EDITOR
Bill McClendon DISC EDITOR
John Tumminaro INTERN

CONTRIBUTING EDITORS

Tom Halfhill, T. Liam McDonald
CONTRIBUTING WRITERS

Barry Brenesal, Brad Dosland, Robert Luhn,
S.J. Ross, Erik Sebellin

Andrew Sanchez EDITOR EMERITUS

ART

Natalie Jeday ART DIRECTOR
Monique Martinez ASSOCIATE ART DIRECTOR
Kevin Ashburn ASSOCIATE ART DIRECTOR

CONTRIBUTING PHOTOGRAPHERS

Kyle Terboss, Jack Hutcheson
CONTRIBUTING ILLUSTRATORS

Gary Locke

PRODUCTION

Richard Lesovoy PRODUCTION DIRECTOR
Jose Urrutia PRODUCTION COORDINATOR

ADVERTISING

Chris Coelho PUBLISHER
Bernard Lanigan EASTERN
ADVERTISING DIRECTOR
Nancy Romano WESTERN
ADVERTISING DIRECTOR
Mary LaChapelle MARKETING DIRECTOR
Sharon Kiernan MARKETPLACE MANAGER
Alison McCreery MARKETING MANAGER
Jasmine Dave SALES COORDINATOR

CIRCULATION

Tina K. Rodich GROUP CIRCULATION
DIRECTOR
Joan Braunstein NEW BUSINESS DIRECTOR
Mimi Hall NEWSSTAND MANAGER
Janet Amistoso DIRECT MARKETING
SPECIALIST

REPRINTS PRINT AND DIGITAL
Reprint Management Services
717.399.1900

How to contact us:

All subscription inquiries 800.274.3421 or
custserv@maximumpc.com

Editorial staff input@maximumpc.com



IMAGINE MEDIA, INC.
150 North Hill Dr. Brisbane, CA 94005
(415) 468-4684 www.imagemedia.com

CHIEF EXECUTIVE Greg Ingham
PRESIDENT Jonathan Simpson-Bint
VICE PRESIDENT/CFO Tom Valentino
VP/EDITORIAL DIRECTOR Matt Firme
VICE PRESIDENT/CIRCULATION Holly Klingel
VICE PRES/HUMAN RESOURCES Steve Leibman
GENERAL COUNSEL Charles Schug

Imagine Media is aimed at people who have a passion.
A passion for games. For business. For computers. Or for the Internet.
These are passions we share. Our goal is to feed your
passion with the greatest magazines, web sites, and CD-ROMs
imaginable. We love to innovate, we love to have fun, and we
have a cast-iron rule always to deliver spectacular editorial value.
That means doing whatever it takes to give you the information you need.
With any luck, we'll even make you smile sometimes.
Thanks for joining us.



Media with passion

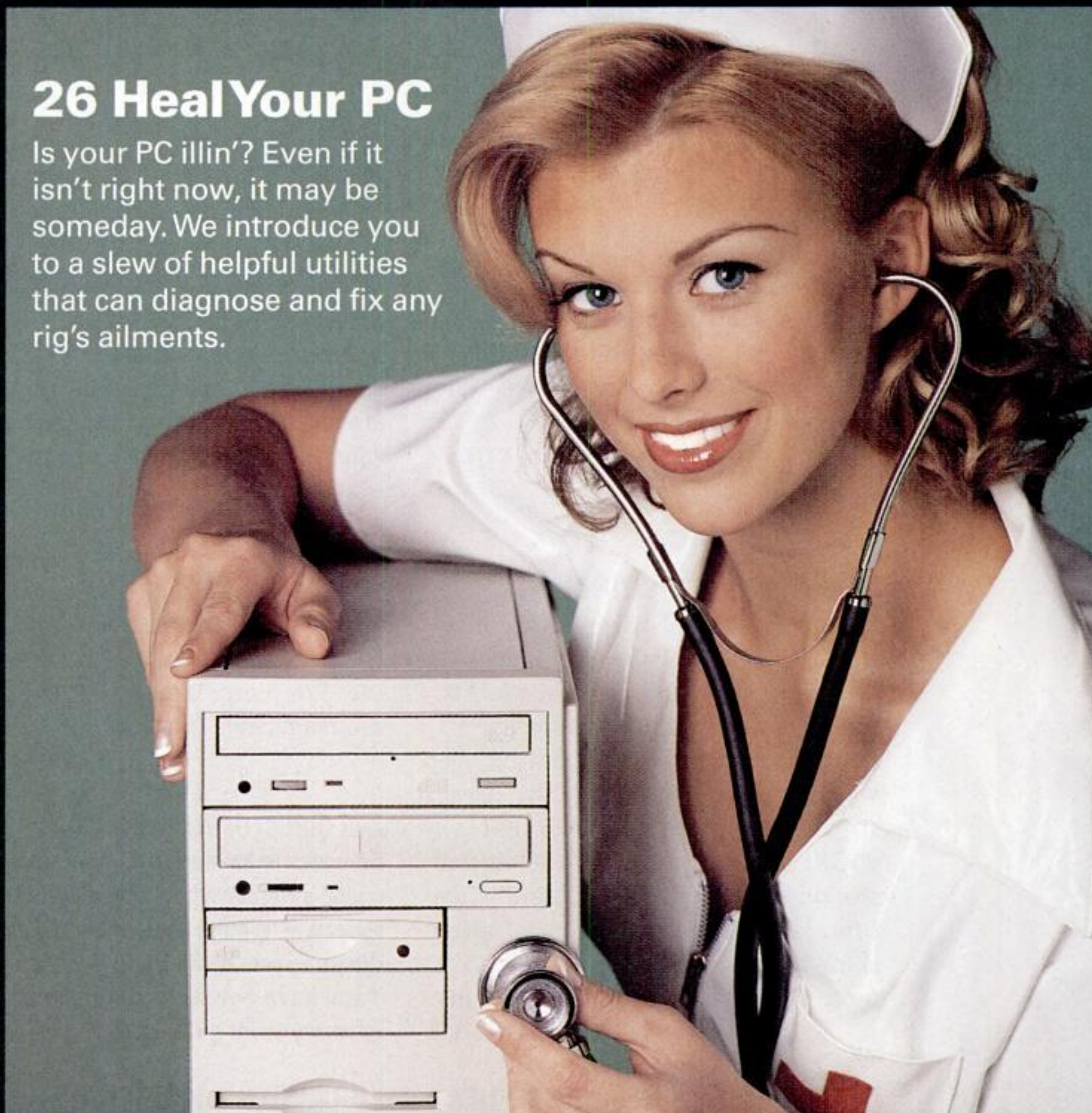
Imagine Media Inc. is part of The Future Network plc.
The Future Network plc serves the information needs of groups
of people who share a passion. We aim to satisfy their
passion by creating magazines and web sites
that offer superb value for money, trustworthy information,
multiple ways to save time and money, and are a pleasure to read
or visit. This simple strategy has helped create one
of the fastest-growing media companies in the world: we publish
more than 100 magazines, 20 magazine web sites, and a number
of web networks from offices in five countries. The company
also licenses 42 magazines in 30 countries.
The Future Network is a public company quoted on the
London Stock Exchange (symbol: FNET).

BATH LONDON MILAN MUNICH NEW YORK PARIS SAN FRANCISCO

THIS MONTH'S FEATURES

26 Heal Your PC

Is your PC illin'? Even if it isn't right now, it may be someday. We introduce you to a slew of helpful utilities that can diagnose and fix any rig's ailments.



44 PC Showdown

How do the indie PC makers measure up to the big boys? We review nine systems from nine smaller vendors to see if the extra TLC they offer really translates into better performance.



40 3D Splendor

At long last, not one, but two games that finally take advantage of the much-touted programmable shader technology of today's videocards. Find out what we think.

MAXIMUM PC (ISSN 1522-4279) is published monthly by Imagine Media Inc., 150 North Hill Drive, Suite 40, Brisbane, CA 94005, USA. Periodical class postage paid in Brisbane, CA, and at additional mailing offices. Newsstand distribution is handled by Curtis Circulation Company. Basic subscription rates: one year (12 issues) US: \$20; Canada: \$34; Foreign: \$44. Basic subscription rates "Deluxe" version (w/CD): one year (12 issues/12 CD-ROMs) U.S.: \$30; Canada: \$44; Foreign \$54.

US funds only. Canadian price includes postage and GST (GST#R128220688). Postmaster: Send changes of address to Maximum PC, P.O. Box 51479, Boulder, CO 80328-1479. Standard Mail enclosed in the following edition: B. Ride-Along enclosed in the following editions: C, C1, C2, C3, C4. Int'l Pub Mail# 0781029. Outside the U.S. and Canada, price is \$53.95, U.S. prepaid funds only. For customer service, write Maximum PC, P.O. Box 51479, Boulder, CO 80328-1479; Maximum PC, 150 North

Hill Drive, Brisbane, CA 94005. Imagine Media also publishes PC Gamer, Next Generation, MacAddict, Official Xbox. Entire contents copyright 2001, Imagine Media Inc. All rights reserved. Reproduction in whole or in part is prohibited. Imagine Media Inc. is not affiliated with the companies or products covered in Maximum PC. PRODUCED AND PRINTED IN THE UNITED STATES OF AMERICA.

Power User Confused

Help me out here, folks. I saw this logo in a *Wall Street Journal* advertisement for an APC Back-UPS. I'm completely in the dark. What do the two asterisks stand for?

—MORTY KURTZ

MANAGING EDITOR KATHERINE STEVENSON REPLIES: Well, Morty, let me give you a hint: One of the letters is an "S," and the other letter is also an "S." But I'm leaving it to you to figure out the order in which they appear.



RAID NEEDS REVISITING

I read your "Speed Trials" article in the January 2002 issue, and I must disagree with your results on RAID 0 speeds. You guys must have been doing something wrong, because I get way better results from my two-drive striped array. I use two 20GB IBM 60GXP's with a 16K stripe and cluster size on an ABIT KG7-RAID, and when I run *HD Tach*, my average read speed is 62MB/sec. I think you should do more testing and append your results.

—SCOTT KLASS

again, it's California. Maybe all bets are off. If I'm reduced to complaining about the model, that should indicate that I'm pretty happy with the rest of the magazine. Thanks!

—FRED BOSICK

ART DIRECTOR NATALIE JEDAY REPLIES: How nice to have a Renaissance man in our midst, a reader who's schooled in the finer aspects of lip gloss application and cleavage. We value your insight, so please let us know if you have any strong feelings about our February cover girl's mascara.

EDITOR-IN-CHIEF JON PHILLIPS REPLIES: A number of readers called bunk on our RAID benchmarks. For what it's worth, the stripe size on our Promise FastTrak controller was set at 64K, and the read-speed results we received weren't inconsistent with what we've recorded in the past. Other controllers and different stripe and cluster sizes could yield different results. We intend to revisit the RAID question next month with deeper coverage: different controller cards, different stripe and cluster sizes, and extra benchmarks. Stay tuned.

FASHION SENSE

This might not even be your fault, but the reasonably attractive Santa pixie in the December 2001 issue was given "Clara Bow" lips by the makeup "artist." The only other magazines I've seen take this kind of artistic license are the ones where the words are rather unimportant. While I appreciate this diversion from hardcore hardware, the agency would have done better to send a somewhat more stacked pixie. Not that she's deficient, it's just that if they send a regular, next-door type of gal, they should keep the makeup consistent with the overall package! But, then

XBOX WITH A VENGEANCE

In response to your January 2002 issue Xbox vs. PC head-to-head: You must be smoking dope. An Xbox costs \$299 plus tax, and so does a bargain GeForce3 card that's almost as good as the Xbox GPU. I see the Xbox as a bridge to my next general-purpose computer. I know you'd like me to do my bit for the economy by buying a \$2,500 monster machine, but that will have to wait a couple of years.

—FRED BERNERT

EDITOR-IN-CHIEF JON PHILLIPS REPLIES: We received a crush of e-mail criticizing our Xbox coverage. Most letters took us to task for staging an unfair fight, as well as completely ignoring the benefits that consoles offer. So maybe it's time we clear up three key points:

■ Readers shouldn't interpret our January *Head2Head* as a final referendum on the Xbox—it was just a pure part-by-part hardware comparison, not an overall value, price-to-performance, or reliability-and-convenience comparison.

■ We at *Maximum PC* firmly believe that consoles and PCs can peacefully co-exist in every home. They serve different purposes. They're just *that* different.

■ While completely factual, the article was certainly written from a PC perspective. We wanted to give PC fanatics plenty of ammunition to win arguments against Xbox sympathizers. If we tried hard enough, we could probably build very compelling arguments for the Xbox as well—but very few of these arguments would be based on pure hardware power.

EMULATE THIS!

I'm not a PC power user—I mostly just read your magazine for laughs—so this is probably nothing more than a boneheaded question from an ignorant geek wannabe. But after reading this month's comparison between the Falcon and the Xbox [*Head2Head*, January 2002], I just thought I'd ask: Are PC software emulators for Xbox or PlayStation 2 games a feasible possibility? Wouldn't it save game developers time and offer instantly expanded markets, compared with the current practice of porting games?

I assume there are disincentives and legal barriers on the part of the console companies—but how about hardware barriers? I notice you mention that the Xbox plays "proprietary 4.7GB software DVDs."

"Just wondering.

—MICHAEL STEELE

TECHNICAL EDITOR WILL SMITH REPLIES: Emulating consoles on the PC is technically viable. Everything from Nintendo 64 and PlayStation 1 to Super Nintendo and original 8-bit Nintendo have all been emulated on the PC. The problem is always on the legal side.

Sony and Nintendo actively fight all efforts to emulate their consoles. Due to an ongoing legal battle, *Bleem!*, the commercial PS1 emulator, has been shut down. Consequently, we do not expect to see anything but underground emulation of the newer consoles anytime soon.

XBOX CPU RESCUE

I'm wondering: Is the P-III inside the Xbox soldered onto the motherboard, or can I open the ZIF socket and save the poor thing?

—MATT TAYLOR

SENIOR EDITOR GORDON MAH UNG REPLIES: Save the poor thing from the Xbox or save the Xbox from the poor thing? Regardless, the 733MHz Xbox CPU isn't packaged in the familiar FC-PGA socket interface that's compatible with the average Coppermine P-III motherboard. The Xbox CPU is packaged in a BGA, or ball grid array, that's soldered to the Xbox's main PCB, making it pretty difficult to rescue.

WIRE WE ARGUING?

Regarding your LAN party how-to [December 2001]: The color code you used for your Category 5 cable will not work. The proper order (and industry standard) is orange/white, orange, green/white, blue, blue/white, green, brown/white, brown. If the green wires are not split, the cable cannot cancel out any interference received from other devices. This may not be important for some people who are using just a 3-meter cable for two computers, but for an extensive network, it's vital!

—NICHOLAS MOORE

TECHNICAL EDITOR WILL SMITH REPLIES: What you wrote, Nicholas, is exactly what we wrote in December. Of course, you're not alone. Judging by the vast number of e-mails we've received, it appears many *Maximum PC* readers got really good grades in "Making Network Cables 101," but failed "Intro to Reading Comprehension" miserably.

To reiterate, we originally wrote: "The first pair (usually orange and orange/white) will take the first and second slots from the left side. The second pair (green and green/white) takes the third and sixth slots." And so on.

The fact of the matter is, it doesn't matter which colors you use for which pairs (all of the wires are the same inside!), just as long as you're consistent on both ends, and just as long as the second pair fills the third and sixth slots of the jack. If you don't do this, then the cable just plain won't work.

TREKKERY

This isn't a big deal, but as a *Star Trek* fan and a die-hard *Star Wars* fan, I know that the "pitiful little band" phrase used by your "Tertiary Adjunct" [December 2001, In-Out] is *Star Wars* dialogue (Emperor Palpatine describing the rebel fleet in *ROTJ*), and not *Star Trek* dialogue, as suggested in your comments. Perhaps the Borg have reached Coruscant.

—JOHN FRIEL

SITH LORD GORDON MAH UNG RESPONDS: Rebel scum, that was clearly a trap laid for those who would seek to question our every reference to *Star Trek* or *Star Wars*. Do you think we would violate both Paramount Pictures' and 20th Century Fox's trademarks without such a transgression getting past our lawyers? Now that I have exposed your acronym-abusing group (*ROTJ*? Gah!), we shall crush you with our fleet of Vipers.

BLAST FROM THE PAST—EXPOSED

I was quite intrigued by your mention of the NV1 in the January issue, because I was pretty sure that at one point, one of my older boxes actually ran that card. Sure enough, after about 20 minutes of digging around the graveyard (aka, my closet), I came upon the Diamond Edge 3D 2000. I figured, What the heck?, and plugged it in.

Zoom! It fired up! I was actually able to get *X-Wing vs. TIE Fighter* to play in "3D-accelerated" mode. Because we all know that tearing off the shrinkwrap of 5-year-old computer hardware devalues it by approximately 9,000 percent, I'll save you the trouble and heartbreak of doing so just to learn more about the board. On the I/O piece, there are three 1/8-inch jacks labeled "In," "Out," and "Mic." There's also your standard DB-15 video out, and what looks like a CAT5 port (Sega Saturn controller, I presume?). I looked around for the nVidia chip, but all I could find was one medium-to-small chip labeled "nVSGP." Other than that, audio is handled by a craptastic Analog Devices chip, and the whopping package is rounded out by a whole 2MB of VRAM.

—TAO TAN

THE CARD THAT TIME FORGOT

With respect to your V5 6000 article in the January 2002 issue: The

principal engineer [of the card] was Scott Porter and I was the secondary (debug and SLI design). There were initially 50 cards; then another 200 cards were made. I have five of them. I'm very happy that someone is still interested in these little beasts—they took a lot of work.

—HANK SEMENEC, EX-3DFX

EDITOR-IN-CHIEF JON PHILLIPS REPLIES: We've e-mailed Hank about possibly adopting one of his cards, and he says he's game. Stay tuned—some day we might be able to show readers exactly how the Voodoo 5 6000 stacks up against today's hottest accelerators.

WELL, IT WAS A NICE CASE

First, let me say I love your magazine. I've been reading it for years, and it's



Tao Tan was perplexed by this chip. Could it be the fabled NV1?

consistently one of the few magazines published today that I actually learn something from. In your December issue, however, I learned something I could have done without, and that's what Gordon creams over. In your "Gear of the Year" feature, Gordon writes that he "creams" over the ATC-101 case. A geek ejaculating on a high-end case? Now there's a visual I could have done without.

I assure you, I'm no prude. I enjoy my daily infusion of Internet porn

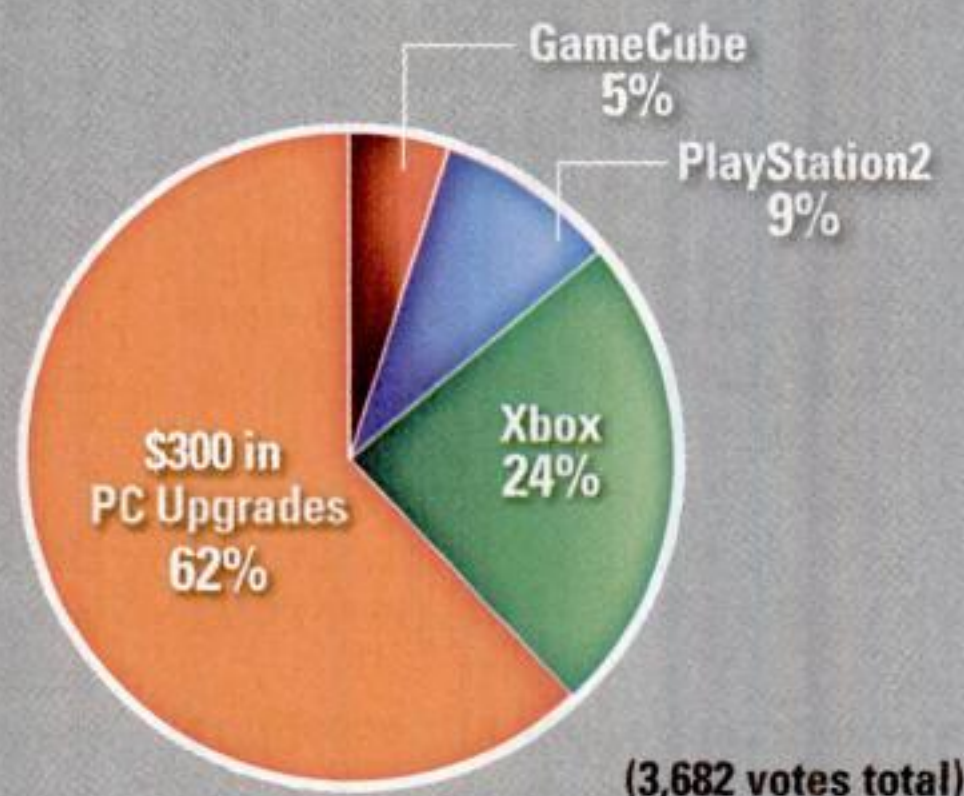
MAXIMUM PC's

READER PULSE POLLS

Your vote counts!

Please contribute to
our reader polls at
www.maximumpc.com.

**What gift would you most
like to receive?**



It looks like our online visitors share the sentiments of most Maximum PC editors—\$300 in upgrades may not reinvent your PC, but an Xbox could definitely change your living-room lifestyle. That's right: PCs and consoles can peacefully co-exist.

more than the next guy. For that matter, I enjoy it more than the next guy with two chicks, or just the two chicks, or maybe two chicks with another chick, or the three chicks with their old-maid school teacher, spanking them while her chimp looks on. A chimp in a swimsuit wearing lipstick and pointing a gun at the back of one of the girl's head, and... um... uh... oh... what does it all mean? Anyway, my point is that Gordo creaming over anything is just plain gross. Tell him to reel it in, wipe off the case, and get back to work.

—JIM DOIRE

MANAGING EDITOR KATHERINE STEVENSON REPLIES: First, let me thank you for providing us with a few special visuals. As for Gordon's graphic expressions of approval: The "Gear of the Year" feature is very important to *Maximum PC* and its readers. With all the great stuff we test throughout the year, it's imperative that we convincingly convey the superiority of the products that make the final cut. To this end, we try not to suppress any editor's enthusiasm—and, frankly, in Gordo's case, I'm not sure we could have done so without getting messy.

FAN MAIL

I really enjoy your coverage on case mods. I've done a few chop jobs myself, and I also work for a major manufacturer, designing new computer systems. Something caught my eye in the December 2001 Rig of the Month article. The case appears to have plenty of fans, yet his case temperature jumps to 35° C during

heavy use. A closer look at your photos reveals the problem. The three side cover fans, the front fan, and the rear fan are all pointed in (with the label side of all fans toward the motherboard)! All that air trying to get into the system has no place to escape. Perhaps you can suggest to Mr. Jugdeo that he reverse the airflow direction of his rear fan.

—DAN SURRATT

SENIOR EDITOR GORDON MAH UNG REPLIES: I agree that 35° C is a little high under heavy use (unless the ambient temperature is close to that normally), and Dev Jugdeo's Air Machine probably could benefit from a little airflow management. But without having seen the Air Machine in person, it's hard to pinpoint the issue. I can say that many first-timers do tend to throw fans into their PCs willy-nilly, without paying attention to airflow. Sometimes too many fans just generate noise and don't aid cooling. Ideally, it's better to have an equal amount of air being sucked into the case as there is being vented.

THE HIGH PRICE OF PERFECTION

I just can't understand why you gave the Falcon Northwest a Perfect 10 in your December review. High price should knock it down to at least a 9, and as the review mentions, it didn't even have front-mounted USB ports. I

decided to compare the Falcon Northwest with another brand your magazine featured, and I can't tell the difference between the two except for the cash value. I went to the respective web sites of Falcon Northwest and ABS Computers and customized an order. I picked the exact same things (give or take brand names), and when all was said and done, I got a price of \$1,589 for an ABS system and \$3,229 for the Falcon Northwest. Can you please throw me a bone and tell me why I should fork over an extra \$1,640 for a Falcon Northwest? I can buy two ABSes for the price of the Falcon! What gives? Is tech support really worth that much extra dough? I don't believe the inclusion of the Holy Grail of cases makes it worth my unemployment checks.

—BRIAN INGALLS

SENIOR EDITOR GORDON MAH UNG REPLIES: We not only give props to vendors that make hot hardware, we also give props to vendors that get it to us first. Falcon is an old-timer in the gaming PC market, and scored a 10 verdict because it delivered the goods, and delivered them on time. If another vendor could have delivered the first Athlon XP, the first GeForce3 Ti 500, the first Plextor 24x, and the first Sound Blaster Audigy in a system, and that system burned the benchmarks to the ground, it also probably would have received very high marks. The truth is, no one else had the hardware as early as Falcon did. If you're not interested in getting the fastest hardware first, that's fine. ABS does indeed offer deadly pricing on its systems (check the feature on page 44 this month, for example), and maybe that's the way you should go. It's not called the bleeding-edge for nothing.

DECLARATION OF INDEPENDENCE

In the December 2001 issue, I found something that made me cock an eyebrow. On page 33, there's a full-page advertisement of an Iomega Peerless portable storage device. Turn a few pages to page 38, and the same product is listed in the "Worst Products of the Year" section. So my question is, Do you let just anyone advertise in the magazine, or do you try to keep a handle on it?

—JESSE HEITSMAN



LETTERS POLICY: MAXIMUM PC invites your thoughts and comments. Send them to input@maximumpc.com. Please include your full name, town, and telephone number, and limit your letter to 300 words. Letters may be edited for space and clarity. Due to the vast amount of e-mail we receive, we cannot personally respond to each letter.

In the December 2001 issue, I thought it was very funny to see the Iomega Peerless advertisement boasting about the product's wonderful capabilities on page 33, while you people totally trashed Iomega's image on page 38, claiming that the Peerless is one of the worst products of the year. Kudos to your merciless evaluation of advertisers (your financial supporters, in a way).
—YOUNG KANG

EDITOR-IN-CHIEF JON PHILLIPS REPLIES: Mr. Heitsman might be surprised to learn that *Maximum PC's* editorial and advertising teams operate 100 percent independently of each other. In fact, we typically don't know which companies are advertising in the magazine until after our review verdicts are rendered. While the ad sales team won't sell ads to tobacco and pornography companies, or companies that have been proven to defraud consumers, it pretty much has an open-door policy for all other potential advertisers, including those hawking crappy gear. No reader should ever interpret the presence of an ad in the magazine as an editorial endorsement! In fact, we encourage readers to take Mr. Kang's position—that the juxtaposition of page 33 and page 38 in the December issue is testament to our editorial credibility.

As for Iomega: If and when it comes out with a great, innovative storage device, we'll certainly note the turnaround in a review. It's always great to see companies make a rebound. It's good for consumers, and good for the PC industry in general.

SOUNDING OFF ABOUT SPEAKERS

As much as I like *Maximum PC*, I've noticed that in every article mentioning speakers, the Klipsch 5.1 set is always chosen as number-one. I have personally tested the Klipsch 5.1 and MidiLand S4 8200 systems side by side, and in my opinion, the MidiLand speakers prove to be better. Is *Maximum PC* so biased as to have found a speaker system that was number-one once, and just assume the manufacturer has continued to produce a number-one speaker system? I would like to think *Maximum PC* is open to all products, and gives every product a fair trial. The MidiLand's specs may not be as impressive as the Klipsch's, but the overall sound quality and clarity of the MidiLand speaker system is better. I hope *Maximum PC* will consider this, and change its way of thinking.

—MATT ROCKER

TECH EDITOR WILL SMITH REPLIES: Testing speakers is by necessity a subjective process. When we test speakers, we put them through a gauntlet of tests, including pink noise at different frequencies, a frequency sweep that starts and ends beyond the range of human hearing (10Hz to 25KHz), and several objective tests as well. In December 2000, we dinged the 8200s because they required elaborate tweaking to achieve acceptable sound, although they did sound great once tweaked. The Klipschies, on the other hand, rock out of the box. Case closed.

I PASS ON PRODUCT ACTIVATION

I was on a forum where some guy said he knew how to install Windows XP without having to contact the "ALMIGHTY" Microsoft to get a number. I e-mailed him to see how this is done, and he told me to go to IRC and ask for an ISO that has no activation. He said that after downloading it, all I need to do is replace some files in the ISO, burn it, then install. Is this true?

—ANONYMOUS

TECHNICAL EDITOR WILL SMITH REPLIES: The short answer is yes. Microsoft has indeed distributed versions of Windows XP without Product Activation to extremely large corporations that buy thousands of Windows licenses at a time. Some of these installs have apparently made it onto the net.

The long answer is that installing any software you don't have a license for is against the law. You can incur fines and penalties if you're caught. And you need to remember that anytime you download something from anywhere on the net, your IP address can be logged. There's no such thing as pure online anonymity.

If that's not enough, we've been hearing reports of illegal software containing viruses, Trojans, and other nefarious elements. Tread carefully. ■

CUT, COPY, PASTE

In the words of one of our very astute readers: "In the most excellent 'Speed Trials' feature of your bodacious magazine [January 2002], I think you got your calendar dates hosed, man!!! On page 36, you predicted a release date of early 2000 (!?) for a RDRAM/850 based mobo for the next-gen P4. I know I lose track of time when I'm into my PC gizmo, but, uh... a year and a half?!!! I'm pretty sure it was supposed to say 2002."

Well, he's right.

COMING NEXT MONTH

IN THE MARCH ISSUE OF

MAXIMUMPC

ULTIMATE PC BUILDING GUIDE!

We're proud to present the updated and upgraded *Maximum PC* guide to designing, building, and modding a pure power PC to your own personal specs. Whether you're a steadfast Intel loyalist or a "ha-ha-I-paid-less-than-you" AMD buff, we'll walk you through everything you need to know:

- Building a system from Step One to final boot
- Troubleshooting common beginner mistakes
- The 10 most important things you must know about Athlon and Pentium 4 system quirks
- Power supply and case cooling cheat sheets
- Step-by-step instructions on the most popular extreme case mods

Whether you're building your own machine from the ground up, or preparing to give your aging rig a brain transplant, this issue will show you everything you need to know—no questions asked.

PLUS: Complete Guide to SCSI, TDK's new 32x CD-RW, and ATI's All-in-Wonder Radeon8500.

Quick Start

The beginning of the magazine, where articles are small

Intel Finally Goes DDR

Chipzilla doubles SDRAM memory rates—and puts RDRAM in question

For much of 2000 and 2001, the rip on Intel was that it was delaying DDR SDRAM support in order to bolster support for Rambus RDRAM, a memory type in which the company shares a financial stake. Shoot, Intel even eschewed DDR to support regular-old PC133 SDRAM as recently as September 2001—and everyone knows that tying PC133 to the Pentium 4 is like hitching a rickety old sidecar to a Suzuki R1.

Well, the wait is over. Intel has finally retooled its primary P4 chipset—the 845—to support DDR, officially known as Double Data Rate SDRAM. The 845-DDR (or at least, that's what we're calling it) will leverage up to 2GB of PC1600 or PC2100 memory. And like its name implies, DDR memory more than doubles the data rate of PC133 from 1GB/sec to 2.1GB/sec, and helps ameliorate the performance embarrassment of the P4/SDRAM union. Otherwise, the new chipset is nearly identical to the PC133

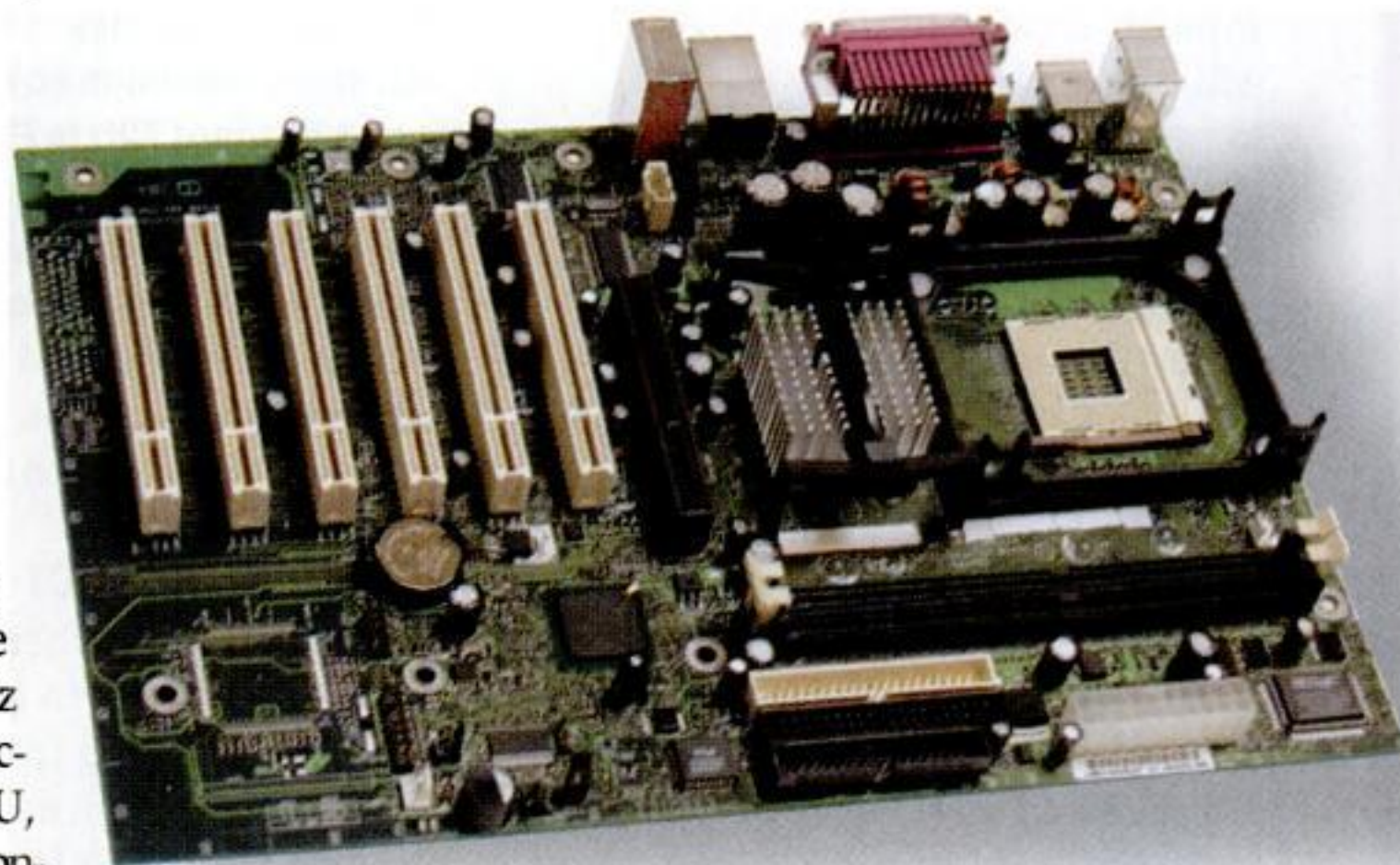
version of 845 and features the same 400MHz data rate connection to the CPU, and 266MB/sec connection hub-architecture.

Intel promised performance and the 845-DDR delivers. In last month's "Speed Trials" article, we found Intel's DDR implementation to offer comparable performance to RDRAM, and far exceed that of PC133, when married to the Willamette version of Pentium 4. We also found the Intel 845-DDR chipset to be faster than VIA's DDR chipset, the VIA P4X266.

It must be noted, however, that VIA is preparing a low-end P4/DDR chipset that includes integrated graphics called the P4M266. Bert McComas, an InQuest analyst, says this is bittersweet news for Intel, which desperately needs an inte-

grated graphics chipset to help propel the Pentium 4 into budget boxes. Unfortunately, VIA may not be able to deliver the part because it's involved in a legal tussle with Intel over the right to use the Pentium 4 bus.

Intel intends to position the 845-DDR chipset in the mid-performance range and push its 850-RDRAM chipset as the high-end performer. This should please all the system vendors who've told us that DDR bottlenecks the Pentium 4 as the CPU reaches higher and higher clock speeds. The lowly PC133 chipset will bring up the rear, targeting budget machines.



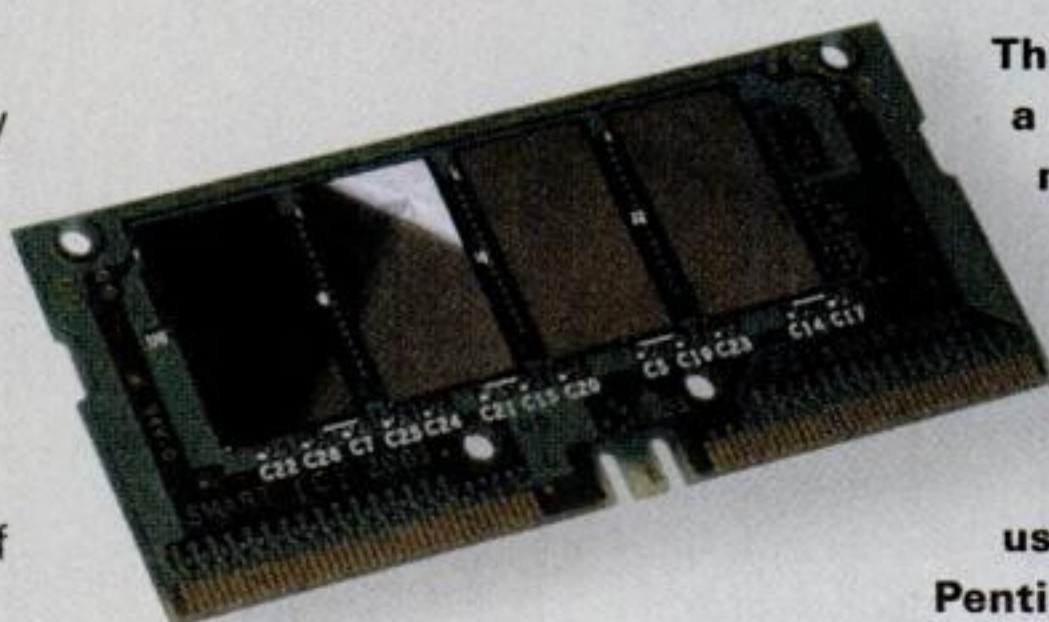
Intel's new D845BG gives the Pentium 4 DDR support.

Rambus: The New Richard Hatch?

Intel plays a game of 'Survivor' with all its memory options

If Intel's memory roadmap were a game show, it would definitely resemble "Survivor." Currently, three different memory types—PC133, DDR, and RDRAM—are vying for Intel's support, if not the ultimate win.

Why, then, has the Rambus corporation done the equivalent of washing its dirty shirt in the community dinner pot? During 2001, Rambus became one of the memory industry's chief antagonists by suing chip manufacturers for patent infringements. But that was last year, and much has changed since then. The courts have largely de-fanged the Rambus suits, and



This module is actually a "SO-RIMM"—a mobile RDRAM memory module. You'll probably never see one in real life because Intel intends to use DDR for its first Pentium 4 notebooks.

the company now finds itself with few friends. Rumor has it that Intel has renegotiated its contracts with Rambus and now has the freedom to pursue its own memory agenda with no strings attached.

All of this begs the 64MB ques-

tion: Will RDRAM get voted off Intel's island this year?

Surprisingly, industry experts say no, RDRAM will survive. But don't get too cozy with PC133 if you want to build alliances. The memory is weak, slow, and old—

way too feeble to remain inside Intel's inner circle. But not RDRAM. It's suddenly a new OEM favorite.

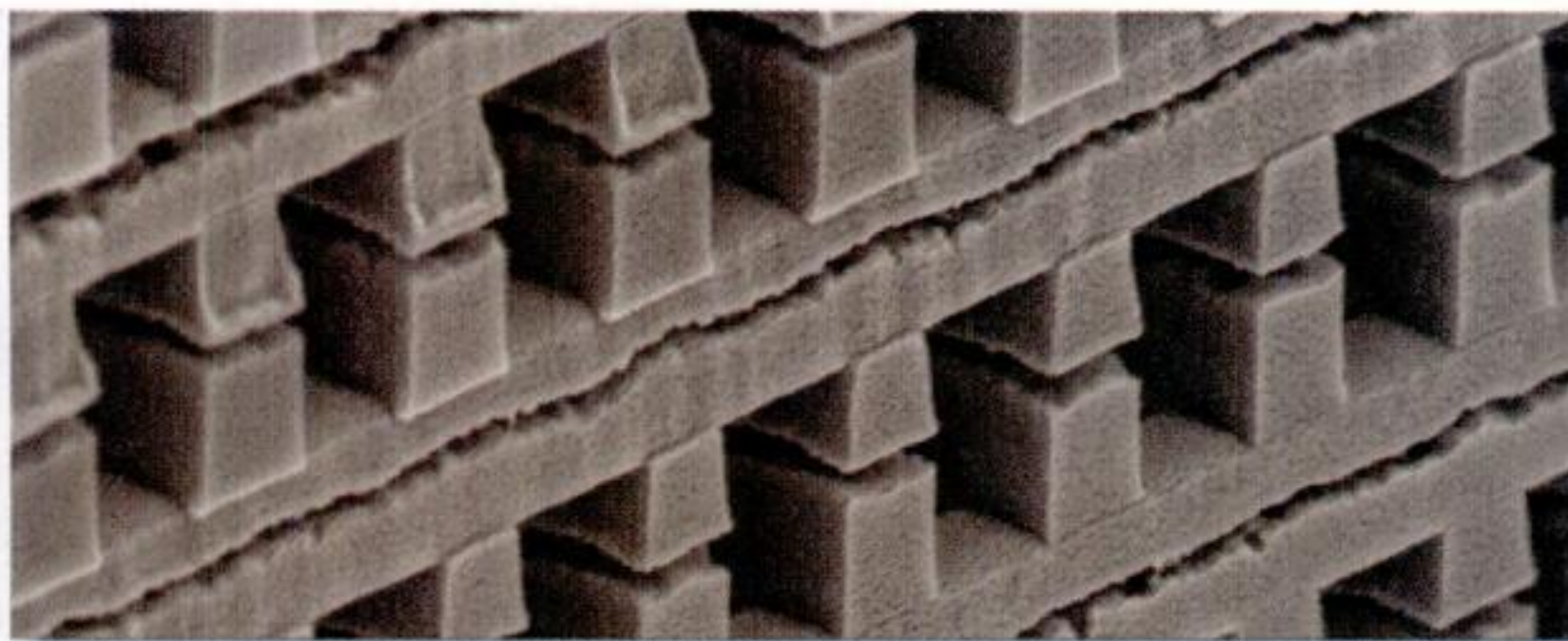
Indeed, both Intel and some large OEMs we've interviewed tell us the faster-clocked "Northwood" version of the P4 offers better performance when paired with high-speed, serialized RDRAM. They say DDR bottlenecks Northwood as CPU speeds increase, whereas RDRAM doesn't. And to help grease the wheels of progress, Intel is expected to push RDRAM from 800MHz to 1066MHz by upping the frontside bus speed of the Pentium 4 later this year.

So, with DDR firmly in the middle and low end, and RDRAM at the high end, it will likely be the kinder and gentler PC133 that gets voted off the motherboard.

The tribe has spoken.

'3D Chips' Reach Upward

Matrix brings new meaning to the phrase "enhancing your vertical"



Close up and personal—actual photography of vertically stacked integrated circuits.

In the pursuit of cramming even *more* transistors onto microchips, Matrix Semiconductor (www.matrixsemi.com) has developed a method of chip fabrication that promises to dramatically increase transistor counts using existing manufacturing techniques.

Conventional microprocessors are built using a single layer of silicon pressed atop a thin layer of insulation. But Matrix's process, called 3-D semiconductor, uses layers of silicon to create microchips that are built vertically as well as horizontally. This is analogous to building skyscrapers rather than one-story buildings on tracts of land that cost much more than the buildings themselves. 3-D semiconductor allows chip manufacturers to squeeze even more transistors onto a fixed amount of silicon real estate, driving costs down dramatically.

According to Matrix, the first application of this technology will be found in inexpensive, write-once memory that's compatible with existing flash memory card formats. These cards are already in production by TSMC (Taiwan Semiconductor Manufacturing Corporation) and should see the light of day sometime in 2002. The 3D fab technology won't be limited to memory, however: It's already being tested for other applications and may soon find its way into all areas of chip fabrication, including CPU production.

TECH ALERT

Bendable Displays Inch Closer to Fruition

A bendable, portable display that offers all the viewing majesty of an LCD has been something of a holy grail to display manufacturers for years. But, unfortunately, a key technical limitation has kept engineers from fully realizing a product. What the world needs, it seems, is truly bendable transistor technology.

Well, Philips researchers in the Netherlands have created just that—a polymer-based transistor that functions much like its silicon-based counterparts, but produces lower



It ain't the *Wall Street Journal*, but it might actually be more entertaining.

heat, costs less, and, of course, can be bent without breaking. Philips recently used its polymer-transistors in a 2-inch, 256-shade grayscale display. The "screen" contained 4,000 transistors and displayed a simple image of a wolf.

Now cool your jets if you're expecting to see rollable, multimedia versions of *Maximum PC* anytime soon—developers say it will be at least five years before bendable displays of any type reach consumers.

▶▶ FAST FORWARD

BY TOM R. HALFHILL



Why CMOS Cameras Will Rule

Memory cards for digital cameras are sometimes called "digital film," but that's only half right. In a conventional camera, film is both the light-sensitive recording medium and the image-storage medium—it captures a picture and saves it. In a digicam, those functions are divided. The memory card (CompactFlash, SmartMedia, Memory Stick) is only the storage medium. The image is captured by a light-sensitive microchip.

The type of light-sensitive chip found in most digicams and video camcorders is a charge-coupled device, or CCD. Recently, a rival technology has been displacing CCDs in some digital-imaging products, especially in low-end digicams, webcams, surveillance cameras, fingerprint readers, and the like. The upstart technology is a CMOS image sensor.

You may have heard of CMOS sensors when the first CMOS digicams appeared a few years ago. They immediately earned a bad rep for their inferior image quality. Reviewers have dissed CMOS sensors for their poor resolution, faded colors, and higher signal noise (often visible as flecks of color in dark regions of a picture). But that's about to change.

CMOS sensors will probably eclipse CCDs in a few years because of their lower power consumption, design advantages, and manufacturing efficiencies. CMOS sensors consume just a fifth as much power as comparable CCDs—welcome news for anyone who has fed a battery-hungry digicam. CMOS sensors need only one voltage level, so they're easier to design into a camera than CCDs, which need three different voltages. And although neither type of chip is easy to manufacture, CMOS sensors can be fabricated with essentially the same equipment as microprocessors, which are also based on CMOS technology. CCDs require a more specialized MOS process. Manufacturers can recoup more investment in their costly CMOS fabs by using them to make CMOS sensors when microprocessors have moved on to smaller-scale processes.

Strangely, CMOS sensors came before CCDs. They first appeared in the 1960s and were used by NASA. CCDs grew more popular because they have better image quality. But CMOS sensors are now improving faster than CCDs. In 2000, Canon surprised the photography world by introducing the first digital SLR with a CMOS sensor, the 3.25-megapixel EOS D30. New CMOS sensors coming this year will capture 16.8 megapixels.

CMOS sensors will gain ground slowly, dominating low-end digicams before seizing the high ground from CCDs. If you've written off CMOS digicams because of some early bad examples, keep an open mind in the future.

Tom Halfhill was formerly a senior editor for *Byte* magazine and an analyst for Microprocessor Report. He is now a technical writer/analyst in Silicon Valley.

Cool Computer Upgrades.

POWER SUPPLIES

"If you're building a machine you need to trust, go with PC Power & Cooling products. Get its case, power supply (the best, period), and CPU fan."

John Dvorak

ECONOMICAL

Save on quality UL recognized power supplies.

STANDARD 145 SFX-L (eMachines)

STANDARD 230 SLIM

STANDARD 250 ATX

ULTRA-QUIET

Unrattle your nerves with a **Silencer®** power supply. Its high-efficiency fan and low-turbulence circuitry reduce noise by up to 90%. You'll wonder if it's on!

SILENCER 150 1U

SILENCER 275 ATX

SILENCER 400 ATX

HIGH-PERFORMANCE



For power that won't skip a beat during drive access or utility sags, upgrade your PC with a premium **Turbo-Cool®** unit.

You'll get **50%-100% more power**, built-in line conditioning, tight regulation, ultra-clean output, enhanced cooling, UL/ULC, and 3-5 year warranty!

TURBO-COOL 300 1U

TURBO-COOL 300 SLIM

TURBO-COOL 300 ATX

TURBO-COOL 350 ATX

TURBO-COOL 450 ATX

TURBO-COOL 450 A4 (Tyan 2462, 2468)

TURBO-COOL 450 XE (SuperMicro P4DC6, DCE)

TURBO-COOL 475 (ATX, A4, XE)

TURBO-COOL 600 (Tower, ATX, or Sun)

REDUNDANT POWER

For *mission-critical* reliability (2 million hrs.), get our high-capacity **DualPower 840 System**. Shown with Tower Case.

DUAL-POWER™ 840 ATX (Fault-Tolerant)



ENCLOSURES

ECONOMICAL



Build your own PC with our popular **Personal Mid-Tower** case. Features rigid construction, 6 drive bays (upgradable to 8), removable motherboard tray, and easy-access side panels.

PERSONAL MID-TOWER CASE

PROFESSIONAL SERIES



Distinctive style, heavy-duty construction, 10 drive bays, AT/ATX compatible, extra cooling and EMI suppression. You can't beat our **all-steel, USA-made** full-tower cases! Std. beige or deluxe version with casters, bold black finish, and a **bright chrome** bezel.

SOLID-STEEL TOWER CASE

DELUXE CHROME TOWER CASE

SLEEKLINE™ SYSTEMS

The incredible **SleekLine™ 1400** packs **more power** in **less space** than any other desktop computer. With 1U server technology, it's faster than PC World's #1 Power PC!



The innovative **SleekLine™ 1400 Mini 1U Computer** features Intel's high-performance Micro-ATX Server Board and the amazing Intel Tualatin processor with **512K cache** (that's double the cache of a Pentium 4)!

PERFORMANCE COMPARISON

COMPUTER	SIZE (cu. in.)	PERFORMANCE ¹
SleekLine™ 1400	525	115 (w/XP)
Dell™ 8200 (2GHz)	2087	106 (w/XP)

¹ As measured by PC WorldBench 4 (higher no. is better).

SleekLine comes with 256MB SDRAM, 40/100GB hard drive, built-in 10/100 Ethernet, high-resolution 3D graphics, and a **versatile, space-saving, USA-made** enclosure that can be mounted, stacked, or carried!

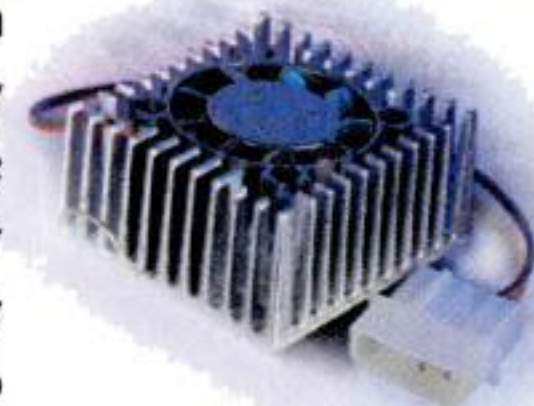
SLEEKLINE 1000 (ASUS M/B, 1GHz Pentium III)

SLEEKLINE 1400 (Intel M/B, 1.4GHz Tualatin)

CPU COOLERS

INTEL®

Processors run hot, often over 230°F! Cool'em by 90°F-140°F with genuine **CPU-Cool™** coolers. Their long-life, ball-bearing fans are *integrated* into patented, die-cast heat sinks. **Last 10 times longer** than cheap imitations! USA-made. 5-year warranty.



CPU-COOL 1.9W (150-200 Pentium)

CPU-COOL M1 (Pentium II, III, SECC2)

CPU-COOL Z1-C (Celeron, PGA 370)

CPU-COOL Z1-HF (Pentium III, FC-PGA)

CPU-COOL 1U (Pentium III, FC-PGA, 1U)

DUAL CPU-COOL X2 (Xeon, redundant)

DUAL CPU-COOL P4 (Pentium 4, redundant)

AMD®

CPU-COOL Z1-H (K6-2, K6-3)

CPU-COOL AG (Athlon/Athlon XP)

HARD DRIVE COOLERS

Heat *distorts* hard disk platters! Cool your drives by 20°F-40°F with our reliable, solid-steel **Bay-Cool**.



BAY-COOL DRIVE COOLER (1 drive)

BAY-COOL III DRIVE COOLER (1-3 drives)

ACCESSORIES



ATX-to-AT CONVERSION CABLE

PENTIUM 4 ATX12V ADAPTER

PC POWER'S ATX POWER SUPPLY TESTER

TURBO-COOL® 2X AIR PROPULSION SYSTEM

BUSS-COOL DUAL-FAN CARD COOLER

VIDEO-COOL GRAPHICS CARD COOLER

SILENCER® AUXILIARY BALL-BEARING FAN

110 ALERT® OVERTEMPERATURE ALARM

SLEEKLINE DESKBOTTOM MOUNTING BRACKET

SLEEKLINE 19" RACKMOUNT BRACKETS

SLEEKLINE DRIVE AND PCI CARD OPTIONS

17th Anniversary

PC POWER & COOLING, INC.

1985-2002

www.pcpowercooling.com • 5995 Avenida Encinas, Carlsbad, CA 92008 • (760) 931-5700 • (800) 722-6555

Hours: 7 a.m.-5 p.m. (PT) Mon.-Fri. Terms: Visa, MC, AE, COD, or PO. Warranty: 5 years for Turbo-Cool (400-600), CPU-Cool, and Bay-Cool; 3 years for Turbo-Cool (200-350), DualPower, and SleekLine; 2 years for all others. SleekLine, Silencer, Turbo-Cool, DualPower, Dual CPU-Cool, and 110 Alert are trademarks or reg. trademarks of PC Power & Cooling, Inc. All other trademarks are properties of their respective owners. © 2002 PC Power & Cooling, Inc.

Copyrighted material

Help make **MAXIMUMPC** a better magazine and...

Win This!

By filling out and sending in the questionnaire below, you'll give us a better understanding of what PC technologies capture your interest. Plus, you'll automatically be entered in a random drawing to win a **Pentax Optio 330**, the smallest 3.3 megapixel digital camera we've ever seen (www.pentaxusa.com).

To be entered in our digital camera drawing you must complete the Personal Information portion of the survey. A completed survey is greatly appreciated but not required. Tear out and send in the entire page to **Reader Survey, c/o Maximum PC, 150 North Hill Drive, Brisbane, CA 94005**. Photocopies of the survey will not be accepted. Entries must be received no later than Feb 22, 2002. The winner will be chosen on or about March 15, 2002 and will be notified by e-mail (or regular mail).



PERSONAL INFORMATION

Name _____

Address _____

Phone number _____

E-mail _____

1) Please rate your level of interest in the following technology areas. Circling "1" tells us you're not at all interested, while circling "5" tells us you're extremely interested:

Full desktop systems

1 2 3 4 5

Notebooks

1 2 3 4 5

CPUs

1 2 3 4 5

Motherboards

1 2 3 4 5

CD/DVD recorders

1 2 3 4 5

Videocards

1 2 3 4 5

Soundcards

1 2 3 4 5

Hard drives

1 2 3 4 5

Game controllers

1 2 3 4 5

Portable storage

1 2 3 4 5

Cases

1 2 3 4 5

Home server kits

1 2 3 4 5

Digital cameras

1 2 3 4 5

Photo printers

1 2 3 4 5

Monitors

1 2 3 4 5

DV cameras

1 2 3 4 5

MP3 hardware

1 2 3 4 5

PDA's

1 2 3 4 5

Speakers

1 2 3 4 5

Overclocking/case modding

1 2 3 4 5

Games

1 2 3 4 5

Media editing apps

1 2 3 4 5

Privacy/security utilities

1 2 3 4 5

System upkeep utilities

1 2 3 4 5

2) What is your favorite part of the magazine? _____

3) How should Maximum PC change its coverage? _____

No purchase is necessary to win. The odds of winning depend upon the number of entries received. Imagine cannot be responsible for lost, late, misdirected, or incomplete entries. The prize is nontransferable and no substitutions will be allowed. Winners will be determined by a random drawing of all valid entries and the decision of Imagine shall be final. This contest is open to residents of the United States only. Return of any prize or prize notification as undeliverable will result in disqualification and an alternate winner will be selected. Winners are responsible for paying any income taxes on the value of the prize received. Void in Rhode Island, Puerto Rico, and where prohibited by law.

Copyrighted material

HELPFUL HINTS

Windows Tips for Morons

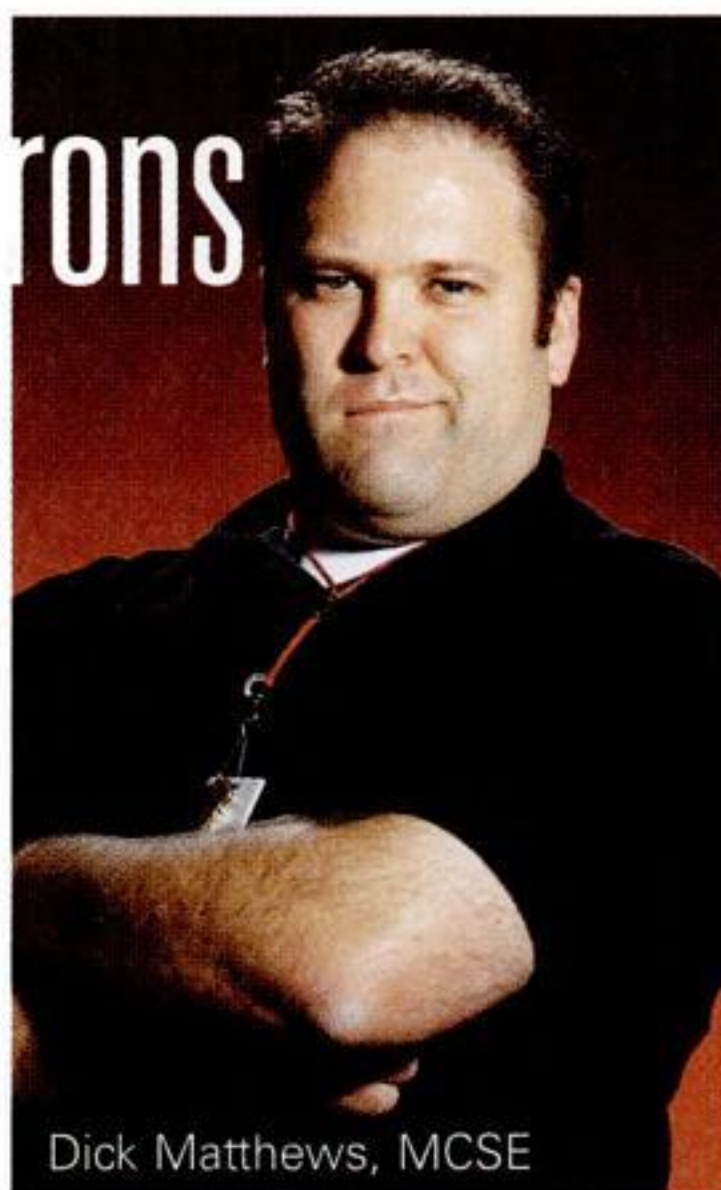
We ♥ Dick

You guys probably wouldn't have guessed it, but ol' Dickie has a soft spot in his heart for Valentine's Day. That's right, the first time I ever touched a computer was on Valentine's Day in 1984. I was a sophomore at East Lancing Prep when on that horrible V-Day I didn't get a single card from anyone in my class.

While a lesser man-child would have cried like a little baby, I got productive and started working on our class computer, a TI-99/4. There's nothing like a little *Parsec* or *Pirate Adventure* to smother one's love woes.

What does all this have to do with this month's scintillating tip? Well, I absolutely *love* many things about Windows XP Pro. For example, the network Quality of Service feature is great at the office. It prohibits any one person—(cough) Suzy from Accounts Payable—from wasting all the company's bandwidth by downloading 'NSync videos. How? By reserving 20 percent of total available bandwidth for *real* work.

But what do you do if you're a home user who prefers the Pro version? Personally, I want to take full advantage of my 1.5Mbit SDSL line. Well, luckily, there's a fix. To unreserve your 20 percent of band-



Dick Matthews, MCSE

width, first log in as the actual Administrator (hold down Ctrl-Alt-Delete at the login screen if you're a wanker who uses the Fast User Switching screen). Now go to the Start Menu and select Run. Type `gpedit.msc` and press Enter. Expand "Computer Configuration," then go to "Administrative templates," then "Network," and select the "QoS Packet Scheduler." Double click the "Limit Reservable Bandwidth" key, and check the "Enabled" item on the Settings tab. Change the "Bandwidth limit %" to 0, then click Apply and exit `gpedit.msc`. If you still have QoS enabled on your network, this should free up that 20 percent.

Sigh. I think I'm gonna go watch something from my library of Whitney Houston concerts now.

CONTEST ALERT

Woof! We Need a New Watchdog!

Turk the Bulldog (the angry bloke you see here) has served *Maximum PC* well as the doggie model for our consumer advocacy column. But the time has come for him to cede his post—so we need a new Watchdog mascot! Do you have a canine friend who might fill Turk's paws? If you do, send us a digital pic. If your dog wins the contest, he or she will be mentioned by name in every Watchdog column, and you and your dog will get a special mention in the magazine's masthead. Heck, we'll even send you a Maximum PC T-shirt for your troubles.

Here's how to enter: Send us one high-resolution, high-quality digital pic of your dog's most serious, "I mean business" face. (And let's be realistic—toy poodles and little scottie dogs probably won't win.) If necessary, borrow or rent a digital camera or scanner and seek photographic lighting advice from an expert. Also, send us a second shot of you positioned next to your dog—this will serve as proof that the model is in fact *your* dog and not some clipart you snaked off the web. Include your name, your dog's name, and your address, and send the entire package to input@maximumpc.com, with the subject header "watchdog contest."

The last day to enter is January 31, 2002. Woof!



FUN-SIZE NEWS

RAM Prices Inching Upward?

Memory prices have been low for months, but the honeymoon might soon be over—consolidations in the memory industry and idle production lines could have RAM prices back on the upswing. This winter, NEC shut down a memory plant to stem the flow of cash. Toshiba, meanwhile, gave up entirely on making memory and sold its U.S. plants to Micron; Toshiba will end production of memory in Japan. And RAM maker Hynix has already raised prices of memory twice this winter.

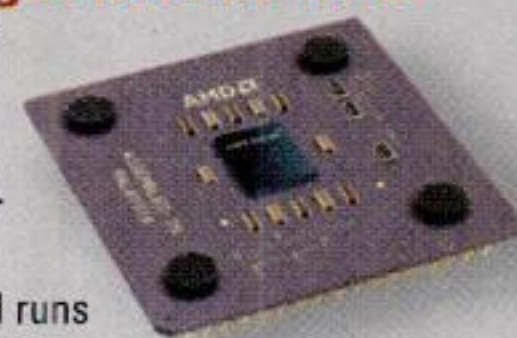


ATI To Build CPU Chipsets Too

ATI will make its own run at the valuable integrated chipset market this year with chipsets for all of Intel's and AMD's CPUs. Slated for a late Q1 launch, the chipsets will support DDR memory and integrated graphics. The company says its aim is to offer system builders the ability to build both low- and high-end systems using as few parts as possible. Company officials dismissed competitor nVidia as a force in the market, and said few have signed up for the much-hyped nForce chipset. Instead, Intel's own integrated graphics chipset will be the primary competitor.

AMD Preps Budget Mobile CPU

AMD will be the first to hit the 1GHz mark in budget notebooks with its 1GHz mobile Duron. The processor features 128KB of L1 cache and 64KB of L2, and runs on a 200MHz frontside bus. The part will cost \$160 in bulk quantities. AMD has traditionally suffered slow acceptance of its mobile CPUs, but Compaq has already announced it will use the new Duron part. Meanwhile, projections show that both home users and business people might buy more notebooks in the future.



RSA and Hifn

WiFi networks finally got a dose of security in December when RSA Security and Hifn released a patch for the Wireless Equivalent Privacy protocol, or WEP. WEP is used to encrypt transmissions in popular 802.11b products. Currently, wireless transmissions using WEP can be cracked in a matter of minutes. Using a scheme known as Fast Packet Keyring, encryption will become exponentially more difficult to crack. Manufacturers of wireless access points and routers will have to update firmware and software to take advantage of the patch.

Alleged Copyright Violator Set Free

Dmitry Sklyarov, the first person charged with violating the Digital Millennium Copyright Act, will be freed in exchange for testifying against his company.

Federal agents arrested the Russian programmer in July after his presentation on how to unlock and copy text from Adobe's protected eBook format at a hacking convention in Las Vegas. Sklyarov agreed to testify against his employer, ElcomSoft, which uses the allegedly illegal code in its Advanced eBook Processor. Sklyarov has been the poster child for civil libertarians who say Sklyarov's case is proof that the DMCA law is overly broad and draconian.



@Risk

Is your ISP about to follow Excite@home into the tel-com graveyard?

What do Internet service providers Excite@home, Northpoint, and Rhythms NetConnections all have in common? Answer: Financial failure has turned these information superhighways into highways to hell.

Once rising stars in the ISP market, all three companies have filed for bankruptcy. While news of failing tech companies doesn't alarm many consumers these days, the fall of consumer-level ISPs such as Excite@home has many people worried about their own Internet connection.

The insecurity is warranted, says Lynda Starr, a telecommunications analyst with Probe Research. Starr says broadband service in general is here to stay, but the weaker ISPs are in danger of being merged or going out of business entirely.

"If you pick a publicly listed company as your ISP, treating it like a stock pick might be prudent."

Some consumers might have avoided the broadband turkeys in the first place if they had done their homework, says Justin Beach of DSLReports.com, a web site that tracks and logs consumer broadband horror stories.

"Many people did predict the demise of Northpoint and Rhythms, as they were clearly overextended," Beach says. "And @home was also predictable in that regard. Anyone looking at their financials would have seen that they

were losing millions a month. If you pick a publicly listed company as your ISP, treating it like a stock pick might be prudent. Would you invest in their stock after reading their last quarterly results? If not, then perhaps it's best not to be a customer either."

Beach says if you're looking to choose a new ISP, you may want to consider smaller operations that are locally run. "If it's a small shop, then it must be making a living of some kind, and therefore likely to continue," Beach says.

Surviving the Shutdown

If your broadband ISP goes down, you'll be stranded without any Internet access. Sound bad? Then protect yourself by following these tips:

■ Consider signing on with a metered ISP (such as Bamnet.com) that charges only when you dial the service. Use this ISP in the event of a broadband breakdown.

■ If your broadband ISP also offers free dial-up access, set up access and test it before the broadband pipes go down.

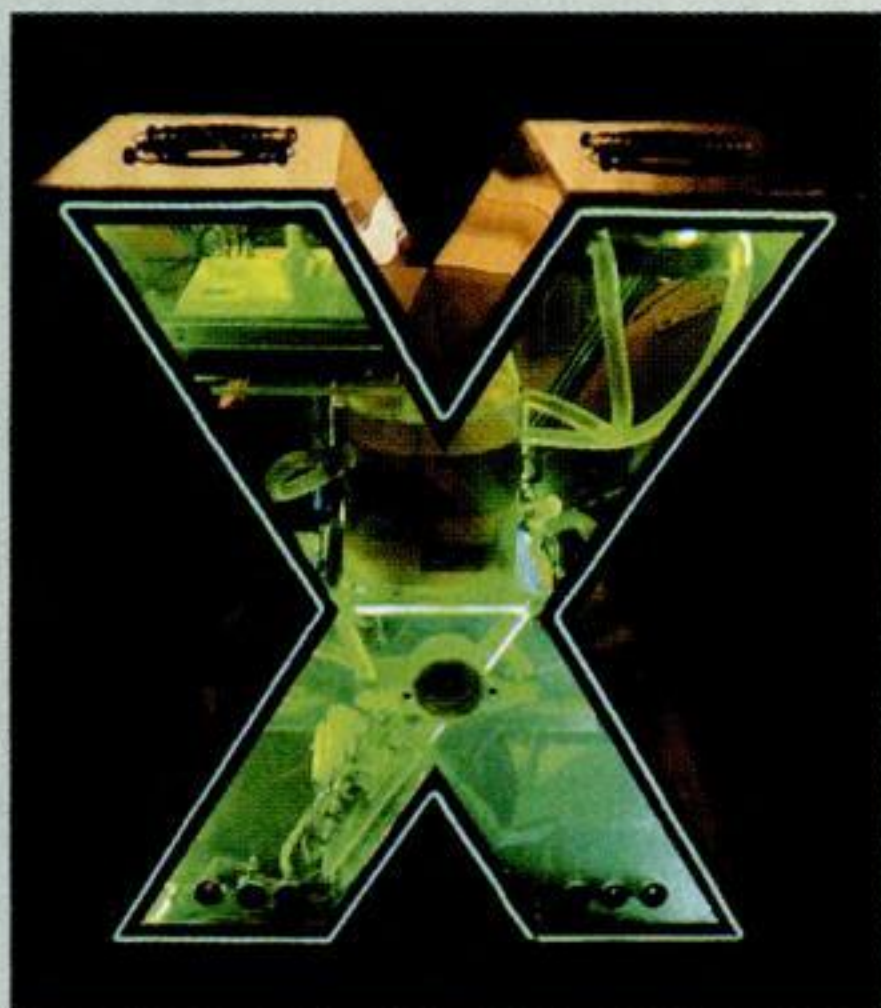
■ Don't rely solely on your ISP for mail service; consider using web-based e-mail services such as Hotmail and Yahoo mail.

■ Determine if your broadband provider will forward your mail to another e-mail address in the event of a service closure.

PC Insanity!

We thought we knew good case modding—but we hadn't seen the real deal until we began receiving pics from the case-modding contest held at the Cyberathlete Professional League event in Dallas last December.

To the right you'll find a sneak peak: Marc "Geezer" Weitz's water-cooled Xbox. Yes, folks, it's a functional PC. Next month we'll show you all five winners in larger-than-life splendor.



GAME THEORY

BY THOMAS L. McDONALD



A Historically Inaccurate Sim Gets Real

The hardcore military simulation market bit the dust in spectacular fashion with the flameout of the uniformly brilliant, consistently money-losing Jane's line. Just because an aircraft, naval, or tank sim that cost millions to make didn't earn out doesn't mean all those sweaty hardware geeks (present correspondent included) moved on to *Bubble Bobble*. When SSI (aka Mindscape, The Learning Company, Broderbund, UbiSoft, and Pat's King of Steaks) finally pinched out the long-awaited *Silent Hunter II* after five years of strenuous pushing and one sacked developer, famished sim-hounds went at it like Bill Clinton pouncing on the last Boston Cream in a box of Dunkin' Donuts. They also quickly came up with a novel complaint in the realm of simulation: The game was unrealistically *difficult*.

Even though German submariners had the highest fatality rate of any branch of service in both World Wars, *Ultimation* still felt the need to put its thumb on the proverbial scale in favor of the Allies when creating *Silent Hunter II*. The developers fitted Destroyer crews with bionic eyes able to pick out a sliver of periscope in a heaving sea at 5,000 meters, equipped them with sonar equipment that could hear a whale fart at a hundred miles, and turned the murky waters of the Atlantic to glass so they could see submerged U-boats. Meanwhile, the submarines were making wider turns and diving slower than their historical counterparts.

Something needed to be done. And fast! Thankfully, the modders were on the case. They swarmed over SH2's historic anomalies. With an official path still little more than a glint in UbiSoft's squinty French eyes, you may want to take a break from downloading porn and pick up the 3.4MB *SH2 Realism Patch*.

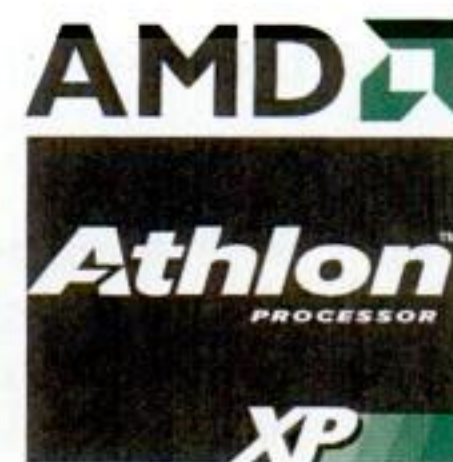
This patch brings the über-Destroyers closer to their historical level of efficiency by making depth charges less lethal, spotting ranges more plausible, and early-model sonar less effective. U-boat diving speed is faster, and their turn radius reduced. The targeting reticule on the 37mm gun is removed, since only wussies and maybe Canadians need targeting reticules. A campaign can now continue even when a primary objective is missed. On the more cosmetic side, the patch adds burning oil slicks, shell splashes, and visible torpedo wakes for steam-powered torpedoes. Beefed-up sounds, including bolts popping out of the hull and shells being ejected, add subtle but welcome touches.

Like any hardcore endeavor, *Subsim's Realism Patch* is anal as hell, but it's also an excellent example of hardcore fans reshaping a game based on their own research.

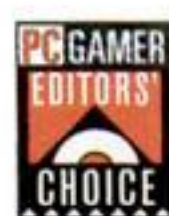
Tom McDonald has been covering games for countless magazines and newspapers for 11 years. He lives in the New Jersey Pine Barrens.

"The fastest PC we've ever tested, bar none!"

-Maximum PC



AWARD-WINNING SYSTEMS



EVOLVE



GREY™

AMD Athlon™ XP Processor 1700+
High-Performance Heatsink/Cooling System
NVIDIA nForce™ 420-D Chipset Motherboard
256MB DDR SDRAM (PC-2100)
Black Floppy Drive 1.44MB
30GB 7200RPM Ultra ATA100 Hard Drive
NVIDIA nForce™ Integrated GeForce2
with 256-bit Graphics Core
Koolmaxx™ Video Cooling System
NVIDIA nForce™ Media and Communications Processor
with Dolby® Digital 5.1 Encoder
Creative Inspire™ 5.1 5300
Speaker and Subwoofer System
16X/40X DVD-ROM Drive
Black Dragon Full-Tower ATX Case 340-Watt PS
Black 107-Enhanced Keyboard
Microsoft Intellimouse Explorer
10/100Base-T Integrated Network Card
Microsoft Windows XP Home Edition
1-Year Toll-Free 24/7 Technical Support
with Aliencare On-Site Home Service
Personalized Owner's Manual
Optimized & Configured for High-Performance
FREE Alienware® Custom Mouse Pad

\$1,299.00

Financing as low as \$35/MO., 48 MOS.

AURORA DDR™

AMD Athlon™ XP Processor 2000+
High-Performance Heatsink/Cooling System
AMD 761™ DDR Chipset Motherboard
512MB DDR SDRAM (PC-2100)
Black Floppy Drive 1.44MB
60GB 7200RPM Ultra ATA100 Hard Drive
NVIDIA GeForce3™ Ti 500 64MB DDR
Koolmaxx™ Video Cooling System
SoundBlaster Audigy™ 5.1 Gamer Sound Card
Klipsch ProMedia 5.1 THX 500-Watt
Speaker & Subwoofer System
16X/40X DVD-ROM Drive
Plexwriter 24X/10X/40X CD-RW IDE
Black Dragon Full-Tower ATX Case 340-Watt PS
Black 107-Enhanced Keyboard
Microsoft Intellimouse Explorer
U.S. Robotics V.90 56K Voice/Data/Fax Modem
Intel® PRO/100 S Network Card
Microsoft Windows XP Home Edition
1-Year Toll-Free 24/7 Technical Support
with Aliencare On-Site Home Service
Personalized Owner's Manual
Optimized & Configured for High-Performance
FREE Alienware® Custom Mouse Pad

\$2,599.00

Financing as low as \$71/MO., 48 MOS.

MJ-12 DDR™

Dual AMD Athlon™ MP Processors 1800+
High-Performance Heatsink/Cooling System
AMD 760™ MP Chipset Motherboard
512MB DDR SDRAM (PC-2100)
Black Floppy Drive 1.44MB
18GB 15,000RPM Ultra160 SCSI Hard Drive
Adaptec SCSI 32Bit/Dual Channel Ultra160 Controller
NVIDIA GeForce3™ Ti 500 64MB DDR
Koolmaxx™ Video Cooling System
SoundBlaster LIVE! 5.1 Sound Card
Klipsch ProMedia 5.1 THX 500-Watt
Speaker & Subwoofer System
16X/40X DVD-ROM Drive
Plexwriter 24X/10X/40X CD-RW IDE
Black Dragon Full-Tower ATX Case 460-Watt PS
Black 107-Enhanced Keyboard
Microsoft Intellimouse Explorer
U.S. Robotics V.90 56K Voice/Data/Fax Modem
Dual 3COM Integrated 10/100 Network Cards
Microsoft Windows XP Professional
1-Year Toll-Free 24/7 Technical Support
with Aliencare On-Site Home Service
Personalized Owner's Manual
Optimized & Configured for High-Performance
FREE Alienware® Custom Mouse Pad

\$2,999.00

Financing as low as \$82/MO., 48 MOS.

24/7 Toll-Free On-Site Technical Support

Be a proud owner of an Alienware® machine with its legendary performance. You can rest assured that it will be backed up with 24/7 toll-free, on-site technical support. You can customize it online or have an experienced member of our staff guide you in customizing a machine for your specific needs. Alienware®, the fastest system you'll ever use. Our slogan holds true; build it as if it were your own.

ALIENWARE.COM®

13462 Southwest 131 Street Miami, Florida 33186

TOLL FREE: 800-494-3382

MONITORS

17" NEC 75F	.25dp	\$219.00
17" NEC FE750+	.25dp	\$289.00
19" NEC 95F	.24dp	\$319.00
19" NEC FE950+	.25dp	\$399.00
22" NEC FE1250+	.25dp	\$779.00



ALIENWARE.COM

Head2Head

A showdown among natural competitors

THIS MONTH: Wolfenstein-3D vs. Return to Castle Wolfenstein

In 1992, id Software unleashed *Wolfenstein-3D* on an unsuspecting public. Generally acknowledged as the first legitimate first-person shooter, *Wolfenstein* shocked people with its "extreme violence" and Nazi motifs. Now, almost 10 years

later, *Return to Castle Wolfenstein* borrows the original game's basic DNA, and supercharges it with state-of-the-art graphics and gameplay. But is newer necessarily better? Let's see...

—WILL SMITH

WOLFENSTEIN-3D

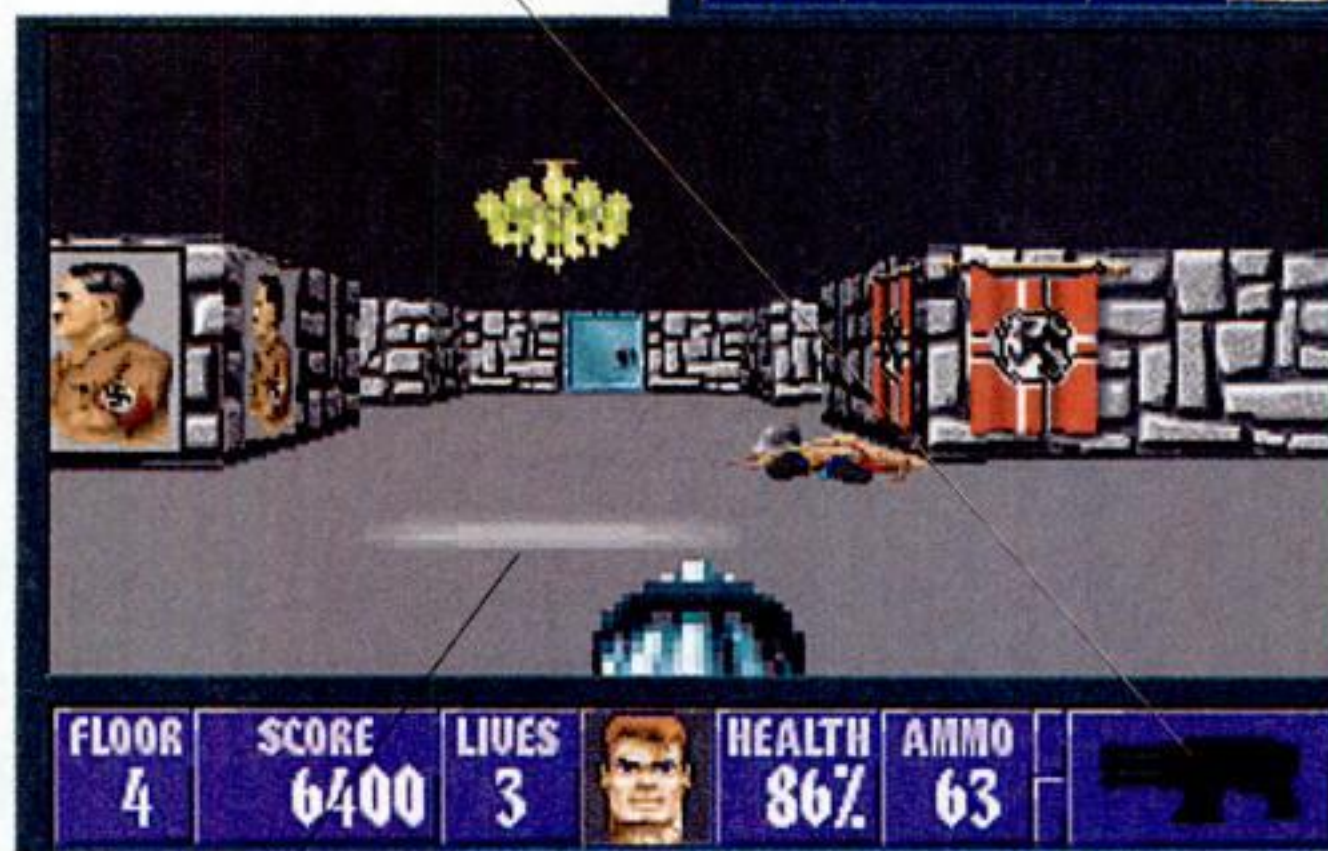
Texture quality: Note the lovely repetitive textures that are the same on every single wall as far as the eye can see. These lower-than-low-res textures are around 40 pixels high but still manage to convey an unmistakable sense of Nazi perversion. **Winner: RTCW**

Weaponry: B.J. had all of four weapons at his disposal in *Wolf-3D*—a knife, a pistol, a machine gun, and a chaingun. Everything used the same ammo, and each was animated with as many as three animations. **Winner: RTCW**



Extras that matter: When it comes to food, B.J. Blazkowicz is none too picky. Here, we see the Blaz eyeing a tasty bowl of dog kibble. Sources of sustenance also include tasty turkey dinners. **Winner: Wolf-3D**

Nazi imagery: A Nazi-killing craze spread across the land when gamers picked up on *Wolf-3D*. We were fully immersed in fascist propaganda, from pictures of Hitler to a swastika on every wall. And the best part? Once you killed a Gestapo thug, another one popped up so you could kill again. **Winner: RTCW**



Lighting: Note how the chandelier bathes the floor below in light. Do you think this effect uses the vertex and pixel shaders in our system's GeForce3 videocard? We hope not—because if this is the best the id team can do with advanced shader effects, then the new *Doom III* project is in a whole mess of trouble. **Winner: RTCW**

German stereotyping: *Wolf-3D* is actually light on German stereotyping. You won't find a single pair of lederhosen or even one overweight, beer-swilling drunk. However (and this is a little-known fact), if you had a new "Sound Blaster soundcard," the guards would indeed shout "Achtung!" when they spotted you. **Winner: RTCW**

Dimensionality: As you can see in this screenshot, *Wolf-3D* is set in a 3D world—it's just a 3D world with only one elevation! No up and no down, thus no ramps or stairs. Oh, and the enemies have just three sides—front, back, and "from the side," depending on how each 2D sprite was animated. **Winner: RTCW**

Dogs: Not only did *Wolf-3D* allow you to kill jack-booted thugs by the dozen, you could also rid the world of dozens of slobbering, blood-thirsty German shepherds. Apparently, PETA (or its equivalent) didn't have much lobbying power in the early 1990s. **Winner: Wolf-3D**

RETURN TO CASTLE WOLFENSTEIN

Texture quality: With super high-res textures and bump maps, *RTCW* definitely has the visual edge. Pay close attention to the detail of the woodgrain on the table. Now that's a texture! **Winner:** *RTCW*

Extras that matter: *RTCW* retains the turkey dinners, which you can now consume in portions, saving the rest for later. The game offers no dog food, however, for painfully obvious reasons. **Winner:** *Wolf-3D*

Weaponry: The 16 weapons in *RTCW* include everything a small army might need to kill Nazi scum. From the modest pistol to the powerful bazooka and Viper cannon, B.J. has all the tools he'll need. **Winner:** *RTCW*



Nazi imagery: This go-round, the Nazis have outdone themselves by decorating their castles, bunkers, and field commands with numerous flags and propaganda posters. The painting of der Fuhrer posing with the Renaissance figures is particularly over-the-top. Of course, you can shoot all the propaganda off the walls. **Winner:** *RTCW*



Lighting: Dynamic lighting, courtesy of the Quake 3 engine, raises the visual bar in the *Wolfenstein* legacy to new heights. If you want to see something really impressive, torch a Nazi with a flamethrower, then watch how he lights up the room with his sunny disposition! **Winner:** *RTCW*

Dogs: You'll notice that this screenshot doesn't include any dogs. That's because Germans in *RTCW* don't have dogs. Bob Barker, we know you're responsible for this. **Winner:** *Wolf-3D*



Dimensionality: Whaddaya know: A 3D world that actually has ups and downs! That's right, you're not stuck on just one plane anymore, as ramps, stairs, elevators, and the occasional curve let you roam with abandon. **Winner:** *RTCW*

German stereotyping: Overweight, busty German women, soldiers that shout "Schnell!" when they spot you, and a liberal dose of phonographs playing Wagner give *RTCW* the edge in the hotly contested stereotyping category. **Winner:** *RTCW*

THE UPSHOT

Despite its age, *Wolfenstein-3D* holds up well when compared with its modern-day counterpart. Running through German castles and shooting Nazis by the dozens is fun! However, with the exception of a few minor gripes—WE WANT DOGS, DAMMIT!—we are

absolutely thrilled with *Return to Castle Wolfenstein*. By going beyond the castle crawl that was *Wolf-3D* and adding outdoor areas, multiplayer, and 21st century gaming technology, Nerve and Grey Matter have created a beautiful sequel.

See page 74 for even more *Wolfenstein* coverage!

Our Flash Media cards can hold countless grandkid photos.

Run. Run fast.

Digital photos. Show and tell. Slow torture. Whatever you're into, our Flash Media cards let you capture and share like never before. Case in point: a single Memorex CompactFlash™ card can record millions of photos. *Millions.* To find the capacity, reliability and price you're looking for, log onto memorex.com. Because whether you're into PDAs, MP3 music or digital photos, we'll help you capture, save and share—all in a flash.



Memorex®
Is it live or is it Memorex?™

©2002 Memorex Products, Inc.

All trademarks and registered trademarks are property of their respective owners.

Copyrighted material

Watch Dog

Maximum PC takes a bite out of bad gear

THIS MONTH: The Dog goes after...

> IBM > Guillemot > Restocking Fees

IBM Hard Drive Complaints Spin Up

Since The Dog asked readers for input on IBM's fast but allegedly unreliable 75GXP series of hard drives (December 2001), fewer than 100 people have written in about the drives. Considering the number of *Maximum PC* readers, the number of complaints has been surprisingly small. But many of those who did have problems had more than one problem.

Many stories were like Levi Tigges', an MCSE. "I've never had a hard drive crash... until I bought a PC with a 45GB IBM Deskstar. I'm now on drive number-three. The first one went down after a couple months, and I was unable to recover the data off of it. The second drive started developing bad sectors almost immediately, but it held up for the two

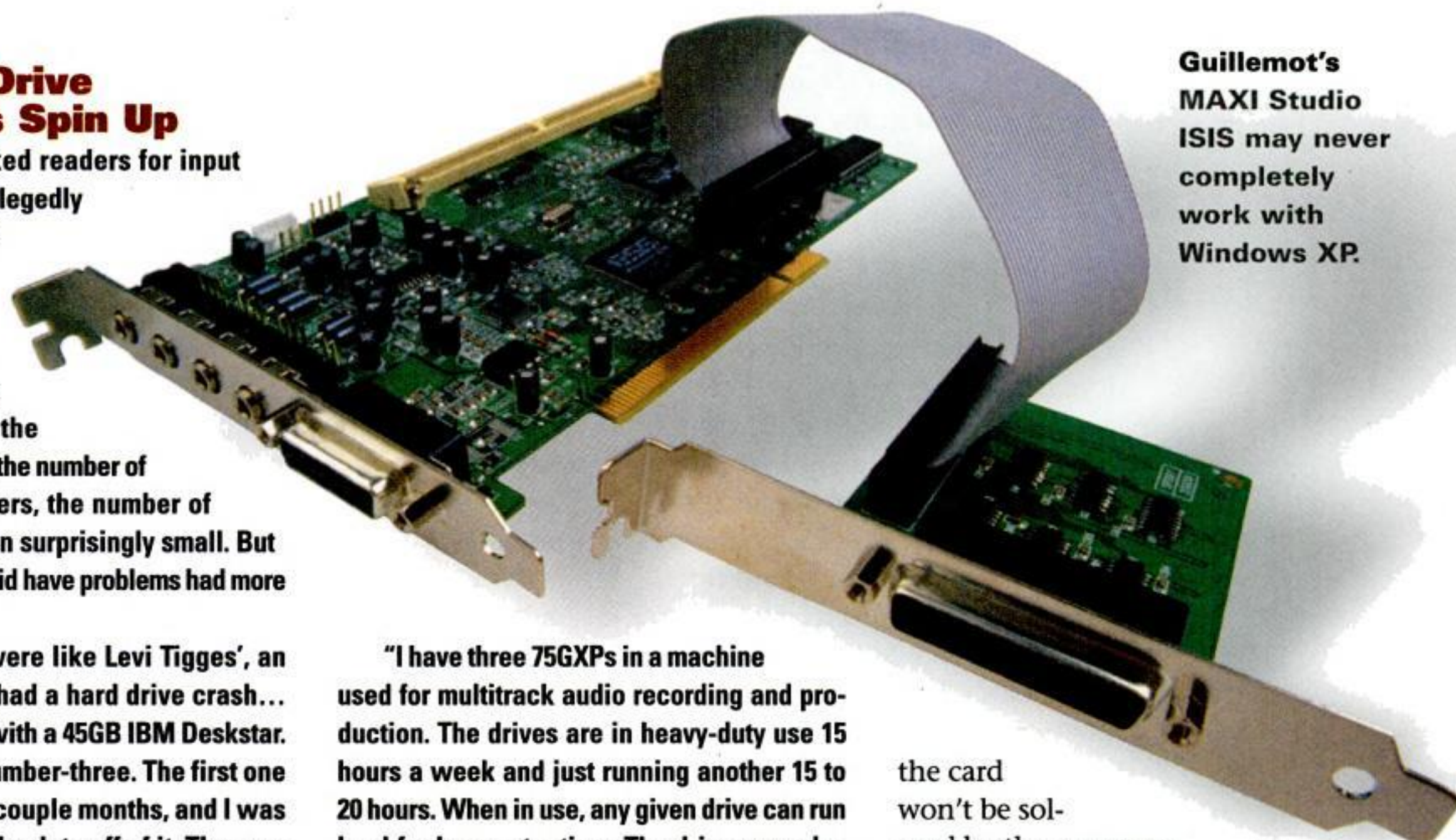
"Two of the drives have been in use for about 18 months, and the other drive for about nine months.

So far not a single glitch or problem."

months it took the online store to send me the second replacement. This time they sent me a 60GB IBM Deskstar and I haven't had any problems since. I'm glad my nightmare seems to be over, but the seek-seek-seek-click seek-seek-seek-click noises still haunt me in my sleep."

Of those people who contacted The Dog, a small percentage said they hadn't had any problems with the drive, such as Mike Rajterowski of the Music and Sound Company.

Got a bone to pick with a vendor? Been spiked by a fly-by-night operation? Sic The Dog on them by writing watchdog@maximumpc.com. The Dog promises to get to as many letters as possible, but only has four paws to work with.



Guillemot's MAXI Studio ISIS may never completely work with Windows XP.

"I have three 75GXPs in a machine used for multitrack audio recording and production. The drives are in heavy-duty use 15 hours a week and just running another 15 to 20 hours. When in use, any given drive can run hard for hours at a time. The drives are also defragged at least once a week, sometimes twice. I have no extra cooling on the drives. Two of the drives have been in use for about 18 months, and the other drive for about nine months. So far not a single glitch or problem. I chose the drives because they came recommended by the makers of the pro-audio card I'm using in the machine. In non-audio apps, I have had two lower-end Western Digital drives fail and one Maxtor drive fail. In an audio application, I have seen one Seagate Cheetah SCSI drive fail in less than two years."

Attorneys for both IBM and the *Maximum PC* reader who filed the suit are keeping mum about the proceedings. For more information, watch this space or visit www.sheller.com/ibmclassaction.htm to request more information from the firm representing the class-action.

The Operating System Is Broken

DEAR DOG: After reading the letter in your December column titled "The Drivers Are Always Broken," I would like to know the true reason that Guillemot's Maxi Studio ISIS card will not work with Windows 2000 or XP. Sure, people who dished out \$300 for

the card won't be so-laced by the response; however, at least they'll get an idea as to why they cannot use their cards under the Windows 2000/XP operating systems and still retain all the studio functions of the card.

— ATIF BUTT

THE DOG RESPONDS: According to a lengthy Q&A Atif conducted with Guillemot at www.vnroundup.com, the driver problem may relate to a design issue with the Maxi Studio ISIS. Says Guillemot: "...the problem with Windows XP or Windows 2000 is that these realtime OSes don't allow any driver or operation to lock the rest of the OS, so the audio buffers cannot go directly through VXD drivers. They must go through intermediary software layers, which the OS can interrupt at any moment, resulting in a regular loss of the audio buffer in transit and a 'click' in the soundtrack. The only way to avoid this data loss when transferring buffers under Windows XP or 2000 would be to have a DMA on each chipset to store the buffers in the memory, but the (main DSP on the ISIS) SAM 9407 has no DMA, and a DMA cannot be generated by software—it requires a hardware access—so ISIS is not/cannot be supported in Windows XP or 2000."

If you're interested in reading the full interview, visit www.vnroundup.com/index.php?item=articles/qa_hercules.

Crazy-High Restocking Fees

DEAR DOG: I'll keep this short and sweet. How can companies get away with charging high restocking and cancellation fees as a percentage of the value? Especially on unopened items? Stores should be able to charge only the cost of putting it back on the shelf, shipping, clearing it out of the computer, and the interest it would have made from selling it to someone else for the duration of time that it was in my possession. I

"There's an easy lesson here: Read the fine print before you make the purchase."

see 25 percent restocking fees nowadays, and 10 percent cancellation fees. A rate of 25 percent is ludicrous. I recently returned a \$620 hard drive and the restocking fee amounted to more than \$150! I told my bank not to pay it. Clearly, a 2 lb. hard drive should not cost \$150 to return.

Returns suck for merchants, I understand. But come on, this is America after all. Can you look into this? Do these companies have a leg to stand on when it comes to exorbitant restocking fees? Many states have interest rate limits for things like auto loans, etc.

— FLETCHER ERICKSON

THE DOG RESPONDS: Fletch, The Dog has some bad news for you. After speaking with officials at the Federal Trade Commission as well as two state consumer agencies, it appears that there is no cap on the amount a company may charge when a

person

returns a product. FTC officials say there doesn't seem to be any laws at the federal level that would prohibit the charges. However, don't feel totally burned. Many states do regulate aspects of restocking fees.

Andrea Saia, director of consumer education in the state of Massachusetts, says it is legal for a company to charge a restocking fee. Stores may also offer you a store credit instead of a cash refund and refuse to accept certain products such as pierced earrings and bathing suits, but *only* if the consumer is made aware of the store policy before the time of purchase. Such a policy must be posted in a conspicuous place. If the notification is made *only* on the receipt, the store is violating state law, as the consumer is made aware of the return policy *only* after the purchase has been made. It is illegal for a store to charge you a restocking fee for defective items. If defective, a consumer may ask that the item be repaired or replaced, or that the money be refunded. Saia says many stores may try to steer consumers into having an item repaired by offering that as the only option, but in Massachusetts at least, that is illegal. The consumer has the choice of what they want to do when the product is defective, Saia says. Despite the law, many stores are ignorant of it or blatantly ignore it, she says. Of course, the laws in your state or where you purchase the hardware may be different.

There's an easy lesson here: Read the fine print before you make a purchase. The Dog looked at a dozen online PC hardware stores featured at Pricewatch.com and found that most carried restocking fees of 15-to-25 percent. Many of the stores also had their return policies posted, although most required you to dig around the site to find the policies.

The sticky question is which state's laws apply. If you live in Alaska and purchase a hard drive from a site based in Massachusetts, which state has jurisdiction? The answer has yet to be settled by the courts. Until then, familiarize yourself with the return terms of the online store you're using and consider not always shopping on price. If you get excellent service from a store, consider sticking with it even if it charges more. Good service is sometimes worth paying the extra money for up front. Woof.



Princeton is not dead. However, the monitor and HDTV maker has changed its address and phone system.

Princeton Dethroned?

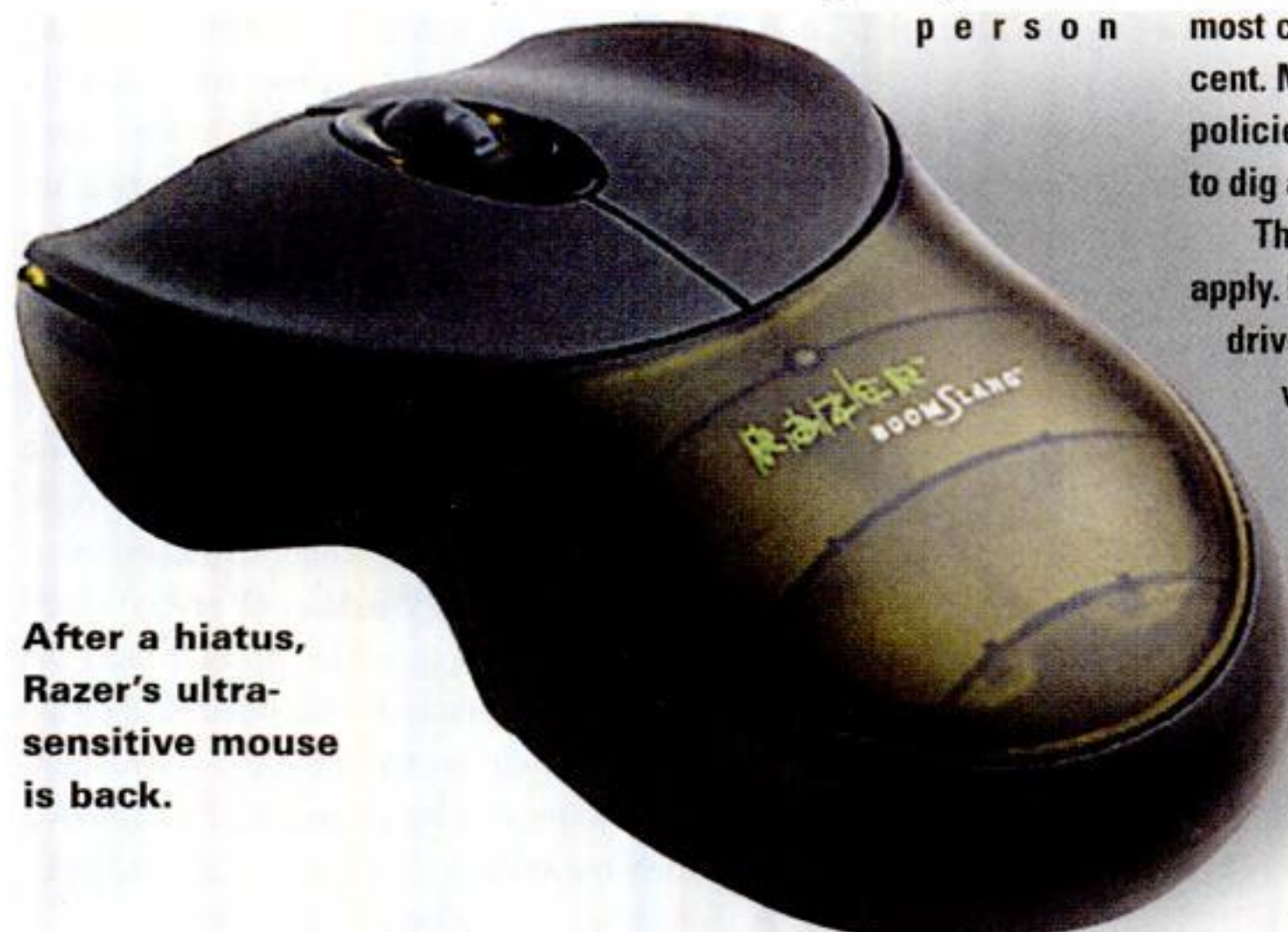
DEAR DOG: Woof! I recently bought a Princeton Graphic Systems Synergy 560 flat panel monitor. The monitor works great, but when I went to the Princeton Graphics web site to do my compulsive driver upgrade check, I got nothing. I found a few discussions on Usenet about Princeton's possible demise. What's up with Princeton, Dog?

— FRANK FISHER

THE DOG RESPONDS: Princeton is alive and well, according to several employees The Dog spoke with. Problems in calling the company or visiting its web site were due to the recent relocation of Princeton's offices.

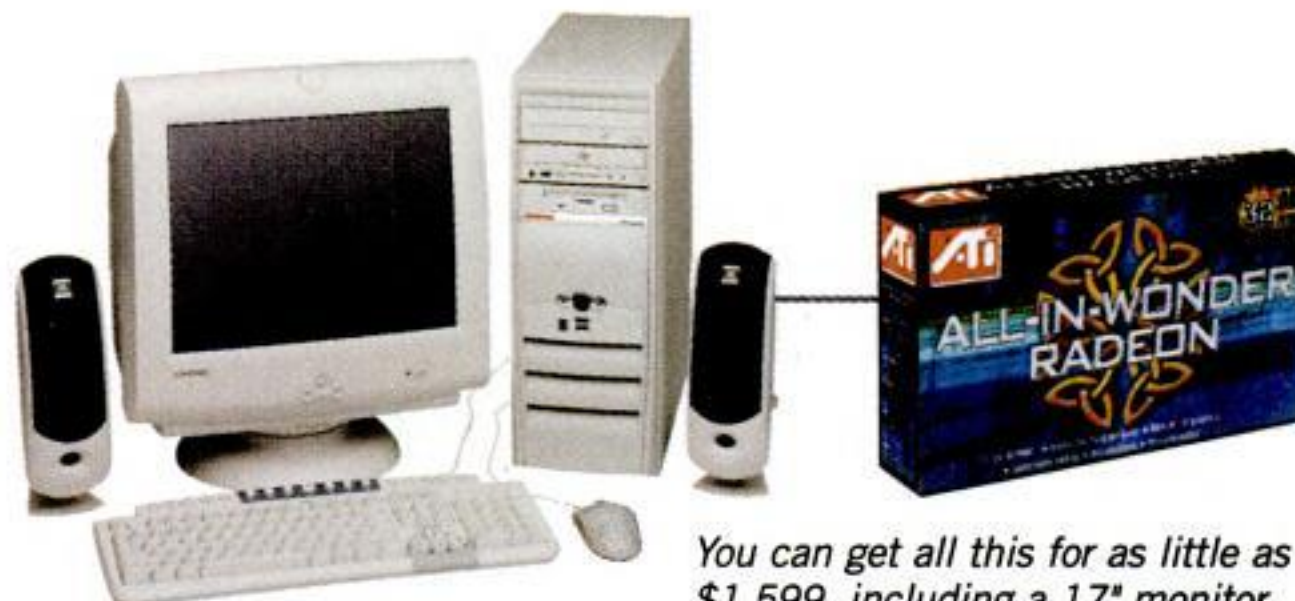
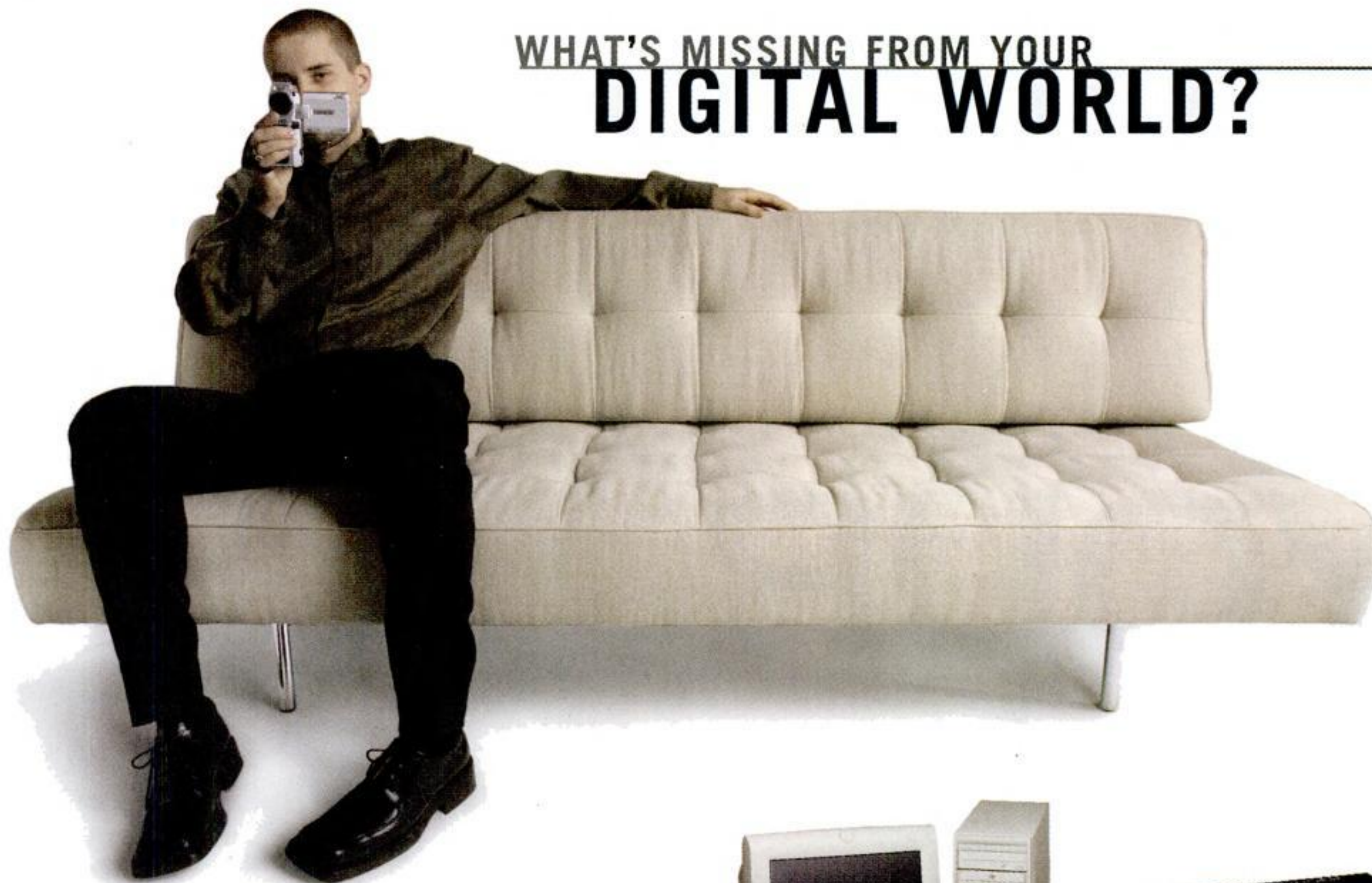
Boomslang Booming Again

In October, The Dog warned you not to purchase any Razer Boomslang mice due to the company's rocky finances. Since then, Razer has apparently come back from the brink, according to reader James Bothe. Indeed, according to the company's web site, www.razerzone.com, it has secured new backers and is again offering its high-resolution mice made for gamers. The company even says it will soon offer a full set of Windows XP drivers for its mice. At press time, The Dog was unable to reach anyone at the company for comment, but the company's web site says funding from Synergy of Omaha, Nebraska will allow the company to spin up its support and technical divisions and begin selling its mice again. With that good news, The Dog rescinds the previous warning about Razer. ■



After a hiatus, Razer's ultra-sensitive mouse is back.

WHAT'S MISSING FROM YOUR
DIGITAL WORLD?



You can get all this for as little as
\$1,599, including a 17" monitor.

If it's the new Compaq Presario MyMovieSTUDIO
bundled solution PC featuring the ALL-IN-WONDER®
RADEON™ advanced multimedia and graphics card,
call 1-888-607-5946 now.

Now your PC's a movie studio. Create your own films,
edit digital content and record your masterpiece onto
DVD or CD to share with your friends and family.
Plus, with the ALL-IN-WONDER® RADEON™, you get
TV-ON-DEMAND™ to record your favorite TV programs,
an interactive program guide, plus lots more.

Turn your digital dreams into reality by
calling Compaq at 1-888-607-5946 today.

For as little as \$1,599, including a 17" monitor, get:

- The DVD-R/RW and CD-RW Combo drive
- Roxio™ Easy CD Creator for burning CDs
- Pinnacle® Studio DV for video editing
- Sonic™ DVDit!™ DVD authoring software for burning DVDs

ALL-IN-WONDER® RADEON™ featuring:

- TV-ON-DEMAND™
- Interactive Program Guide
- And more



Copyright 2001, ATI Technologies Inc. All rights reserved. ATI, RADEON and ALL-IN-WONDER are trademarks and/or registered trademarks of ATI Technologies Inc. All other company and/or product names are trademarks and/or registered trademarks of their respective owners.

ALL-IN-WONDER® RADEON™

Buy direct from Compaq.
CALL 1-888-607-5946

HEAL YOUR PC!

*18 utilities to help you
diagnose and fix your PC's
most debilitating ailments.*

BY ROBERT LUHN

The PC is like a junkie—always needing another fix. Blame it on the OS, blame it on the BIOS, blame it on Rio, but your typical PC has more breakdowns than Mariah Carey and the Santa Monica freeway combined. Windows takes a left turn into a tree; your modem suddenly starts babbling about checksum errors; you pop a disc into your RW drive and it responds, *Say what?*

If you often encounter these digital snafus, you may be asking yourself, What's wrong?

What can I fix? What should I shove into the nearest landfill? What's that stain on my pants?

Seek no further, for the answers lie herein. Well, if not the answers, at least the programs that should help you find the answers. We've assembled a medicine chest full of the roughest, toughest, probingest—and sometimes wackiest—diagnostic and repair programs on the planet. We're talking about programs that go where *Norton Utilities* sometimes fears to tread. One major plus: Almost all of these software tools are

available as downloadable shareware or nearly fully functional demos, so you can try before you buy.

Have fun in candyland, and don't forget to turn to page 36 for a peak inside our hardware trauma kit.

[Continued on page 28](#)

MPCPA

MAXIMUM PC POWER-USER
ASSOCIATION APPROVED

AS WITH ALL POWERFUL MEDICINES,
USE ONLY AS DIRECTED. ALWAYS BACK
UP ALL IMPORTANT DOCUMENTS
BEFORE INSTALLATION.



"If you promise not to cry, I'll give you a sponge bath afterwards."



"Oh, my!
We need
to reset
your
multiplier
to 4.5."

Continued from page 26

Beyond Norton

Most of these programs are aimed at unearthing information about your PC and peripherals, testing your hardware, offering advice, and in some cases, actually fixing problems. While we didn't focus on speed-up, turbocharging, or über-tweaking programs (those were the focus of our October issue cover story), a few are included in this article because they also perform killer diagnostics before they goose your PC.

Now before you put on your scrubs and begin an invasive PC biopsy, please consider:

- Some of these utilities are hard to configure, hard to run, and lack documentation. In many cases, you'll be leaving the cozy confines of Windows and entering DOSville, where text is green and "07D8:0028" is just another way of saying "keyboard." If you speak Hex, you'll be in your element.

- Many of these utilities crashed our test PCs more than once. Like benchmark tools, they're designed to push your PC to the max, and sometimes your PC will falter. Your angst may vary, depending on what Windows version, BIOS, and etceteras you're stuck with. Always back up your data and Registry before you run any kind of diagnostic or repair tool.

- Some of these tools are from small-time developers. So follow our advice: When playing with "boutique" software, scan *everything* you download off the net with an up-to-date antivirus program.

- Some diagnostic results may be difficult to interpret. Have an engineer pal on call and specialized tech dictionaries bookmarked if you're afraid of winging it.

- Expect minimal tech support. With a Symantec-caliber utility, you get comprehensive help, but with many of the util-

ities in this article, you may get little or no hand-holding.

Second and Third Opinions

Before you ask your PC to turn its head and cough, you might ask, How useful are diagnostic and repair tools anyway? For an answer, we turned to hardware gurus Jim Aspinwall and Stephen Bigelow, who have respectively penned such coffee table favorites as *IRQ, DMA, & I/O* and *Troubleshooting, Maintaining, and Repairing PCs*. These are guys who have solder burns on their fingers and can field-strip a PC in the dark.

Aspinwall says that before using a diagnostic utility, you should first rely on information provided by the PC itself. "If the PC won't boot," he says, "the beep codes will tell you if you have bad RAM, a bad CPU, or a bad system board."

But if you need more info, both say you should forget about petitioning Windows for help and instead turn to diagnostic tools like the ones described in this article. "Using Windows to troubleshoot hardware is a fool's errand, because just about everything has to be working for Windows to boot in the first place," says Bigelow. "You need an OS-independent diagnostic like *TuffTest* that's self-booting."

Bigelow admits that it's hard to tell if a diagnostic is cadging answers from Windows or querying the hardware directly, as it should. To get the real deal, he says, look for diagnostics that are designed to check specific hardware. The best diagnostics will also be self-booting or OS independent. "A real hardcore diag that gets into a drive's sectors and performs specific functions can be quite efficient," says Bigelow. "A cosmetic tool that just asks Windows, then pukes out the answer in a pretty dialog is worthless."

For very specific diggin' and fixin', don't forget the utilities that came with your hardware or are on the hardware vendor's web

OUR THREE PC GUINEA PIGS

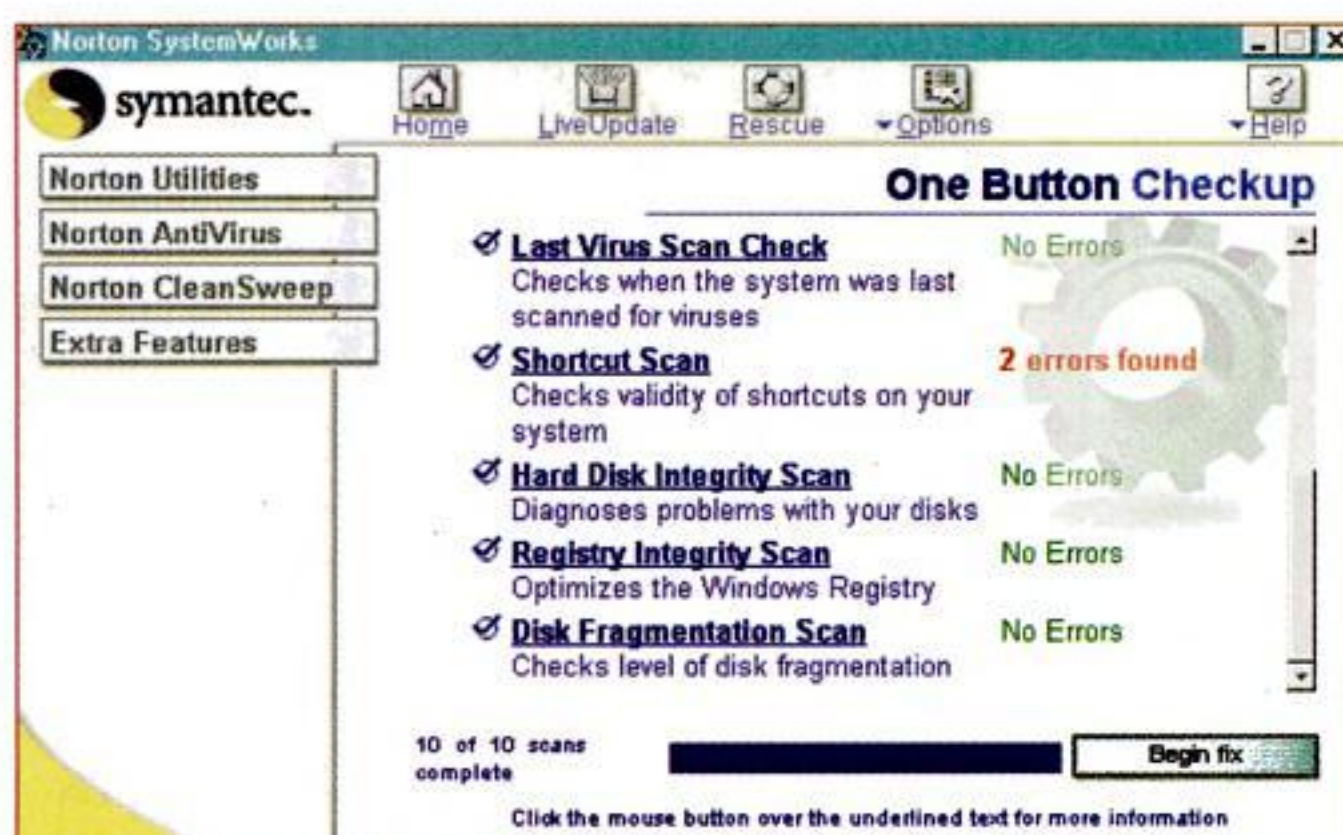
We used three PCs to test all the utilities in this article. One was a spanking-new Dell Dimension 8100 with a 1.3GHz P4, a 60GB hard drive, and 128MB of RAM, running WinME. But the real beasts of burden were two Frankenstein PCs that've been upgraded as often as Pamela Lee.

The first was a once-hot Gateway box that boasts a 150MHz MMX Pentium. Yowza! This machine runs Win98, 32MB of RAM, and a 2GB hard drive. Hooked to the brute is what's affectionately called "The SCSI Chain Of Hell"—an external CD-ROM drive, a CD-RW drive, a Fujitsu MO drive, and a

scanner, all spanning everything from SCSI I to SCSI Wide/Fat/Mondo III. We figured all of this madness would be enough to turn the toughest diagnostic into a puddle of goo.

The other PC was a 200MHz Pentium Pro/Win98 system with 96MB of RAM and a mix of modern devices (a 60GB Maxtor hard drive) and older ones (a 2MB videocard!). This system has known problems—a flaky floppy drive, RW read problems, and occasionally unexplainable crashes.

No, you may not see these PCs. Their ward has been quarantined.



One of *SystemWorks 2000's* improvements is a one-button checkup.

site. If your hard drive is flipping out, the manufacturer may have a diagnostic/repair tool custom-fit for the job. Just remember: *Don't* run these tools on other products in the vendor's line or other vendors' products. If you do, you might turn your PC into desk pizza.

Finally, don't forget to download upgrades, patches, service packs, flash ROM updates, and so on. These often plug massive security holes, fix bugs, and add diagnostic/repair tools to your system.

DIAGNOSTIC & REPAIR SUITES

The following suites are Swiss Army knives for the PC. All evaluate your hardware and sometimes your OS as well. Some can repair problems; others toss in appealing extras such as fax programs. They don't dig as deep as the specialized tools reviewed later in this article, but they're a good place to start if your PC is on the fritz.

Norton SystemWorks 2002 Professional

A utility suite is kind of like a station wagon: It's not very fast or stylish, but it gets you where you need to go. Usually, *Norton SystemWorks* is the General Motors of the breed—it does a lot of things pretty well, and it's backed by a hefty service and support team. We're talking 24/7 phone help, a web site packed with knowledge bases, FAQs, downloads, and a well-regarded virus research center. It's the biggest name in utility suites, so we'd be remiss in our doctoring duties if we didn't include it in this roundup.

But alas, there's a special hell reserved for *Norton* users if things go terribly awry during installation. On our 1.3GHz Dell patient, *SystemWorks* crashed and burned, upchucked internal errors, and wouldn't uninstall. It took five hours of ripping out Registry entries to undo the damage. Yet installation on our 200MHz

PC went without a hiccup.

The good news is that for all your efforts, you get a suite of rock-solid tools, notably Disk Doctor (for file repair), Windows Doctor (for undoing knots in Windows' hoop skirts), and Speed Disk (a defragger). New to the suite are a lite version of Roxio's *GoBack 3* (which can rollback Windows to a previous state), an applet that can list all active processes (such as DLLs), and a One Button checkup of your Registry, program integrity, virus status, and free space.

If you don't have an all-in-one suite—and you don't need in-depth system information, refined diagnostics, or specialized help—*Norton's* the package to buy. *Supports: Win98, ME, NT 4, 2000 Professional, XP; \$100; www.symantec.com*

PC-Doctor Service Center 2000 2.3

PC-Doctor kicks ass when it comes to analysis. It's also smartly programmed. This Windows/DOS duo is logically laid out, runs quickly, comes with competent, hyperlinked PDF documentation, and includes five loopback plugs (special port attachments that let the program compare transmitted and returned signals for errors.) Then again, the package also costs (ouch) \$500.

The Windows version of the suite sometimes digs deep and other times barely turns the soil. It records only your current video mode, not all the possible ranges of your videocard. The data it provides on your CD-ROM or CD-RW drives is cursory, but the readout on plug-and-play devices, DMA channels, and such is huge. Its hardware testing capabilities are uneven. For example, it beats up your CPU's registers, cache, and such, but elsewhere it simply provides notes like "Video Memory – PASSED." The program also crashed until we disabled its MMX tests, and it was unable to find some of our CD-ROM and RW drives.

Compared to the Windows version, *PC-Doctor* for DOS is the real deal. Boot off the floppy and you're greeted with a simple text menu. You can run prefab quick and normal tests, grab system info in one shot (and save it to a file), or put your PC through an endless test loop to ferret out problems. And, rest assured, the program ferrets indeed. It was

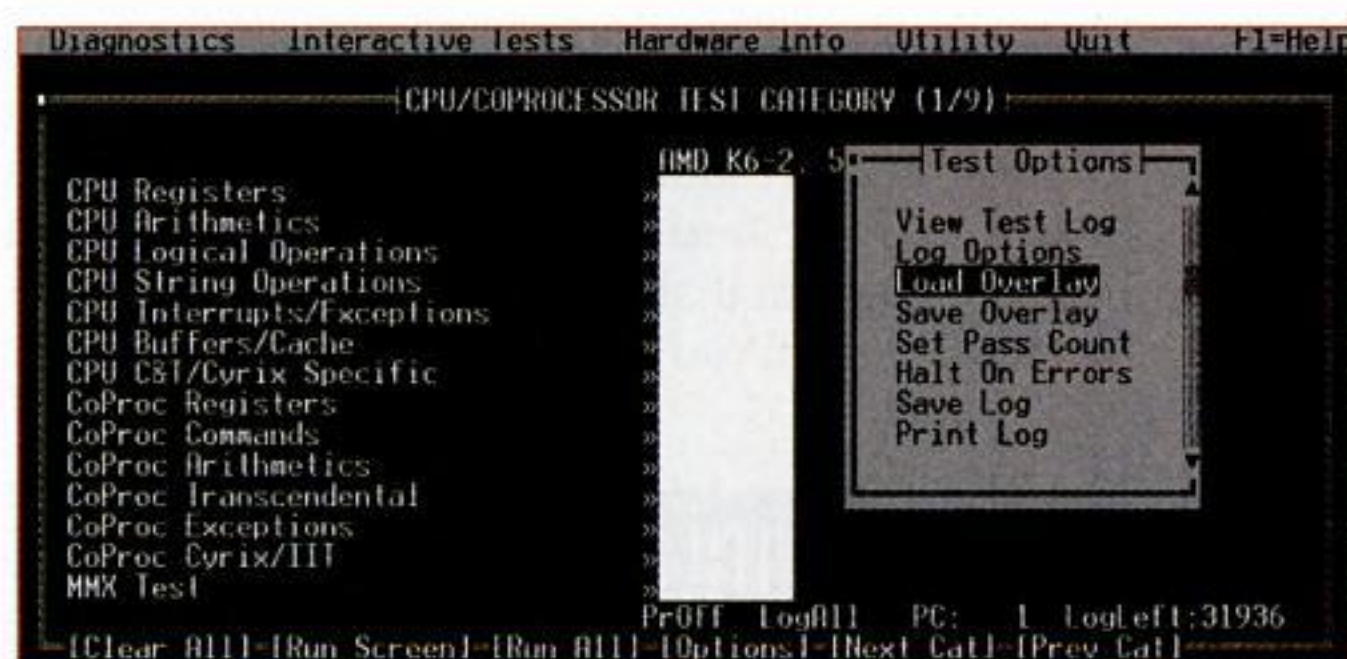
one of the few diagnostics to determine video-card brands and flag specific CD-ROM problems. It also never crashed—a testament to solid programming. Extras you *don't* get in the Windows version include audio tests, a memory debugger, a CMOS editor, and an app that drains your laptop battery. If you can afford the toll—and if you have a capable repair utility—*PC-Doctor* is one diagnostic suite to have on hand. *Supports: 386 or later CPUs, DOS 3.30 and later, Windows 95, 98, ME, NT, 2000; \$500 (\$125 for up to three software updates per year); www.pc-doctorstore.com*

TuffTest-Pro v.3.52F

TuffTest is like a pug—tough and simple, with a tendency to chew on things.

A single executable creates a bootable floppy with all the necessary fixins. Reboot and you get a barebones text interface run with F-keys. You can't save test results to a file or view pretty graphics, but *TuffTest* does examine and torture-test memory, hard and floppy drives, serial and parallel interfaces, your motherboard, keyboard, and a dab of video (up to VGA). That's it—but isn't that enough?

Analysis ranges from modest (you never learn your motherboard BIOS version, for example) to fairly detailed (such as a probe of specific track ranges on disk drives). There's outdated stuff, too, like a destructive media analysis and repair test, which has been passé



PC-Doctor for DOS lets you pick exactly the tests and subtests to run—right down to which CPU registers to probe.

since *SpinRite* pioneered nondestructive, low-level testing years ago.

If you want a lean, affordable, OS-free test program, *TuffTest* is it. But use it in conjunction with a larger suite—something *TuffTest's* developers likewise suggest. *Supports: 8088 through P4 CPUs and compatible processors; \$30 (plus \$30 for three loopback plugs); www.tufftest.com*

QuickTech Personal

This one could serve as a model for all PC diagnostic tools—fast, small, OS-independent,

CPU Test			
Processor	Pentium 4, 1894.22 MHz		
Co-Processor	Internal		
Level 1	12 KB Code + 8 KB Data		
Level 2	256 KB		
Bus Types	ISA, PCI, USB, IDE		
Test Mode	Current	Pass	Fail
Protected Mode Instructions	Passed	1	
Stack Manipulation	Passed	1	
Flag Conditions	Passed	1	
Arithmetic Instructions	Passed	1	
Data Transfer Control	Passed	1	
Execution Control	Passed	1	
Processor Control	Passed	1	
String Operations	Passed	1	
IA MMX Instructions	Passed	1	
Intel IA MMX-2 Instructions	Passed	1	
AMD 3DNow! Instructions	Skipped		
Internet Streaming SIMD	Tested		

Yo, P4. What up? How ya doin'?
QuickTech Personal will tease out the details, tap your hardware in every sensitive spot, and report what passes and what fails.

easy to run, and quick to provide detailed and useful output. There's no installation with *QuickTech Personal*. Just pop in the floppy, boot up, and go to town. *QuickTech* sports a lean, logical text menu system that's easy to navigate.

All in all, *QuickTech* is deep, complete, and accurate. It's also one of the few diagnostic tools in this roundup to properly identify Level 1 cache size, the keyboard controller, videocard and motherboard makers, mobo BIOS version, CPU socket type, a ton of details about the CPU (even voltage), what UltraDMA and PIO modes your drives support, and other types of far more specialized information.

System tests—of everything from your CPU to the controller chips—are likewise thorough. For example, the CPU test probes everything from protected mode instructions to AMD 3DNow! support. And unlike some utilities, when it hits a test that's irrelevant, it skips it. What a concept. You can also run

all the tests in a batch.

But *QuickTech* isn't perfect. It froze when it tested a CD-RW drive and can send test results only to a printer. Nor does it test USB, joysticks, FireWire ports, soundcards, or DVD-RAM drives. The manual provides useful, if terse, advice. On the flipside, unlimited tech support via fax, e-mail, and a web interface is free and always available; phone support is a toll call.

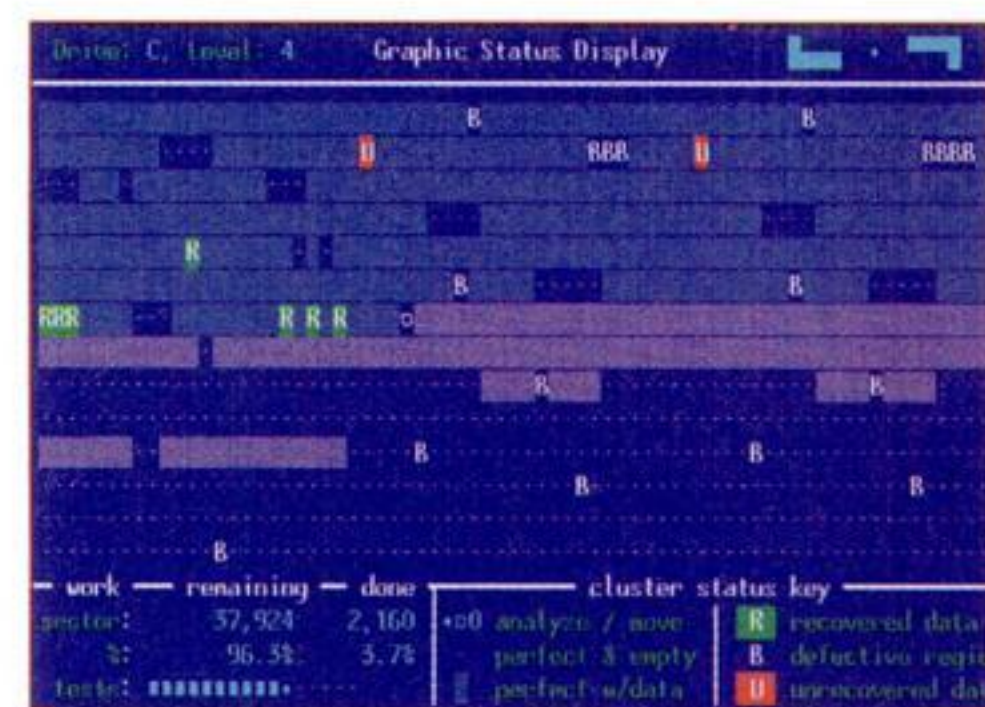
If you need stronger medicine for your system, pony up for *QuickTech Pro*. You get deeper information gathering (especially on PCMCIA, USB, peripherals, video, and Y2K compliancy), sound and USB testing, and handy CPU, hard disk, floppy, and video benchmarks. If you're a hardcore user or gamer, go with *Pro*. If not, *QuickTech Personal* should do. *Supports: 486 through Pentium 4, AMD, and Cyrix processors (no OS needed); \$150 (personal version), \$400 (pro version); www.uxd.com*

STORAGE: HARD DRIVES

SpinRite 5

SpinRite is the hard disk diagnostic and recovery tool, plain and simple. If this utility can't save your hard disk and files, nothing short of open-platter surgery will raise your dead data. *SpinRite* goes beyond file repair tools like *Norton's Disk Doctor* by scrutinizing every square inch of your disk—essentially writing and reading data gazillions of times to uncover areas that are difficult to read and write. Problem areas are cordoned off, and endangered data is moved to safe areas on your drive.

Like all good diagnostics, *SpinRite* runs off



SpinRite scrutinizes every square inch of your hard disk, looking for areas that are failing. This report shows which clusters are OK, which are bad (and cordoned off), and where data has been relocated to.

a boot floppy. The program runs a series of intense disk-controller diagnostics, followed by a very in-depth, nondestructive disk scan. (In other words, your data isn't trashed.) The initial scan can take all night; subsequent visits are much shorter. You can also interrupt a *SpinRite* session and return to your place later. The tool spits out an array of onscreen reports, from a graphical cluster-by-cluster analysis to a readout of current activity. If you want to preserve your data, *SpinRite* is a must-have. *Supports: IDE, EIDE, SCSI hard drives, Zip and Jaz drives, DOS 2.1 or later, Windows 3.x, 9x/ME \$89; www.grc.com*

EZ-SMART 5

EZ-SMART is all over your hard disk like Homer on a box of Krispy Kremes. Using the SMART technology built into most hard drives, this utility continually monitors IDE, SCSI, and Ultra ATA drives, and fires off a flare at the

PLAYING DOCTOR WITH PC CERTIFY

If the Swiss Army developed a tool for diagnosing and treating common PC maladies, we think it would look a lot like *PC Certify*. Comprising more than 400 diagnostic tests and utilities, the software fits on a single floppy disk, with room left over for volumi-

**CHECK IT OUT
ON THE DISC**

nous help files, tutorials, and log files. While you'll still need a decent trauma kit and replacement parts to get a seriously ill PC up and running, *PC Certify*

can shave hours of time that might otherwise be spent tediously examining every component in search of the culprit.

PC Certify operates from any pure DOS environment (such as a Safe Mode command prompt; not that DOS-window fakery), and tests can be executed in a batch run or individually, subsystem by sub-



Having a copy of *PC Certify* around is akin to having a little X-ray machine on a floppy disk.

system. Even candystripers will be able to pop in the disk and test hard drives, floppy drives, I/O ports, CPU, and memory for an instantaneous, *Star Trek*-

like diagnoses—all while receiving a basic education on how PCs work (for example, one help file explains how to interpret Hex dumps from crashed programs). Seasoned professionals can trade up to more sophisticated *PC Certify* versions that perform remote diagnostics, back up the Master Boot Record, and place the system under heavy stress for burn-in testing. One of our favorite features backs up CMOS settings, so a battery swap won't force you to re-tweak your BIOS.

Young'uns may find the DOS-based interface a bit jarring to work with, but hey, it's still easier and less awkward than administering a barium enema.

—LOGAN DECKER

Go here for a special deal:
www.pccertify.com/max-pc

POLYWELL 2002

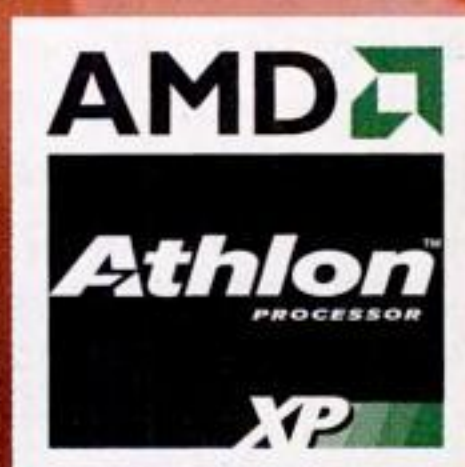
Smooth, Rich Internet Experience

American Made Computers

800.789.8027

The Ultimate PC Workstations For Gaming and Developers!


POLY
SYSTEMS



www.Polywell.com



Extreme Performance for Windows® XP

Expert 24.7 Technical Support Services

Boost software performance with
QuantiSpeed™ architecture



POLYSTATION 890E The Fastest x86 based Workstation

2x AMD Athlon™ MP Processor 1900+
with QuantiSpeed™ architecture*
outperforms competitive 1.9GHz processors
1GB DDR ECC memory (Exp. to 3GB)
12-Bay Aluminum Tower w/450W PS
120G Internal IDE Disk Array HD
40x16x10x CDRW, 16x DVD-ROM
ELSA Gloria DCC 64MB Open GL Graphics
21" High Res.25mm Graphics Monitor
Sound Blaster Live Audigy Gamer
Creative 5.1 Theater Subwoofer Speakers
56K Modem, 100bit LAN, 1394 Firewire
MS® Windows® 2000 or XP Professional
Starts at \$3,999 SKU# 890E1106MX

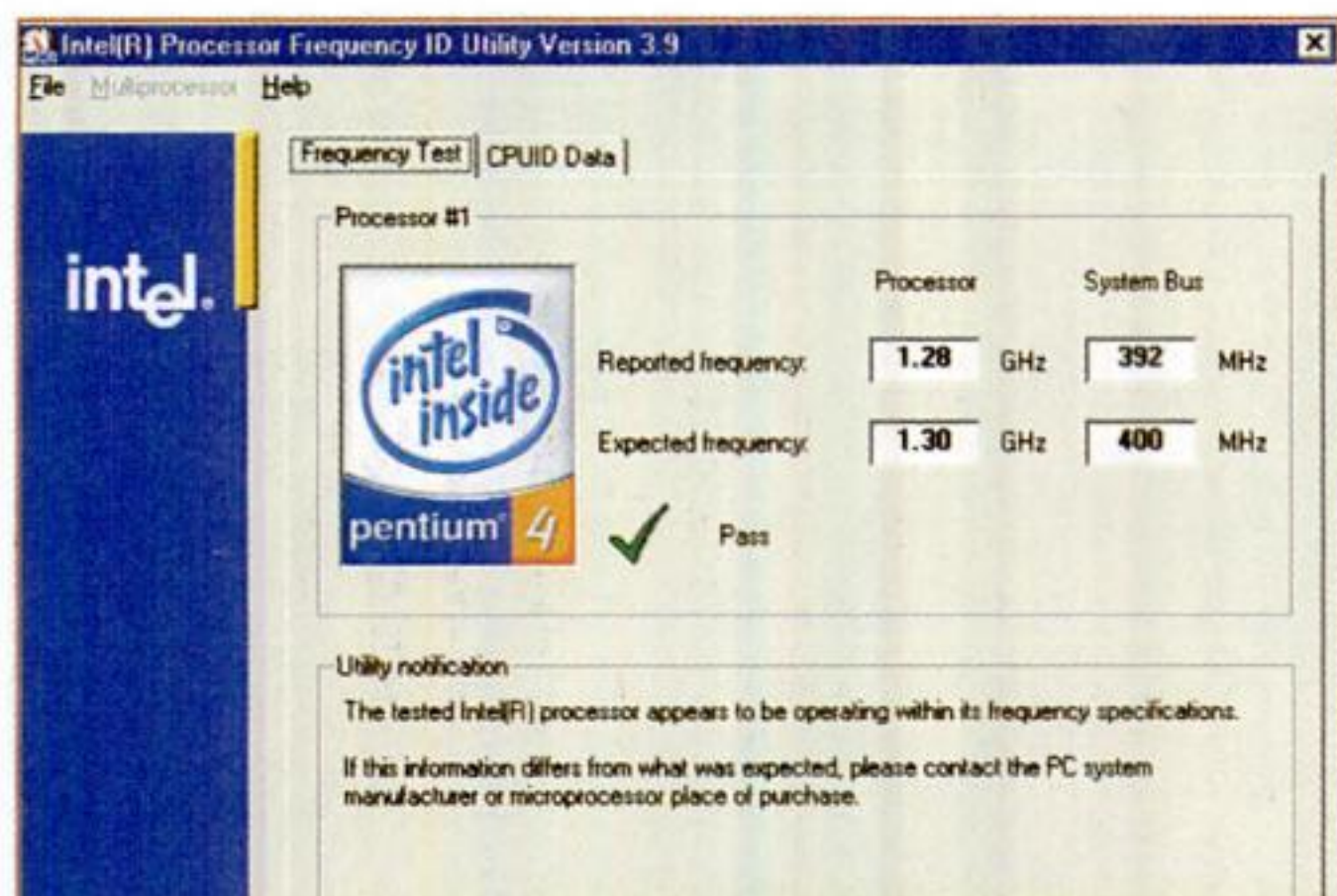
POLY 880XP The Fastest Gaming PC on Earth

AMD Athlon™ XP Processor 1900+
with QuantiSpeed™ architecture*
outperforms competitive 1.9GHz processors
512MB DDR memory (Exp. to 2GB)
10-Bay Aluminum Tower w/3000W PS
80G Internal IDE Disk Array HD
40x16x10x CDRW, 16x DVD-ROM
Nvidia GeForce3 Ti500 64MB Graphics
19" High-Res.26mm Graphics Monitor
Sound Blaster Live Audigy Gamer
Creative 5.1 Theater Subwoofer Speakers
56K Modem, 100bit LAN, 1394 Firewire
MS® Windows® XP Home Edition
Starts at \$2,199 SKU# 880XP1106MX

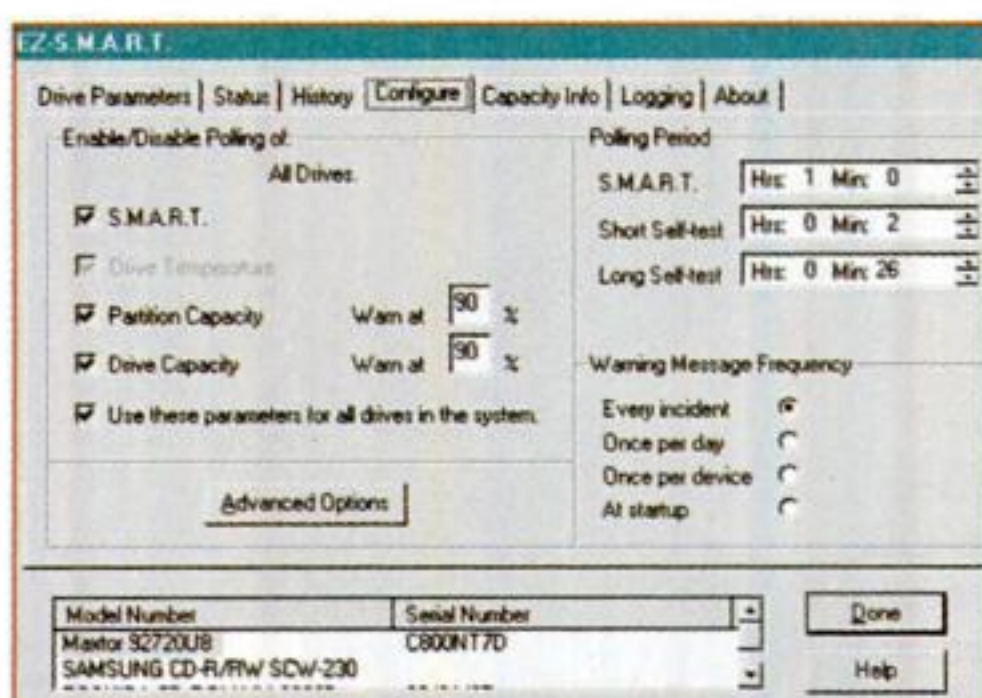
Polywell Computers, Inc 1461 San Mateo Avenue South San Francisco CA 94080 650.583.7222 Fax: 650.583.1974

*QuantiSpeed(TM) architecture operates at 1.60Ghz. AMD and ATHLON are trademarks of Advanced Micro Devices, Inc.. MS and Windows are registered trademarks of Microsoft Corporation.

Copyrighted material



What CPU goes there? Intel's CPU-ID frisks your CPU for info on family, speed, and just a bit more.



The great hard disk snoop EZ-SMART constantly watches for failure, and in this screen, can be instructed when and how to warn you.

first sign of trouble. Granted, some PCs will warn you if a SMART drive is failing, but often only after it's too late. EZ-SMART, meanwhile, can raise a red flag much earlier, based on your settings. Installation tucks an icon into the Windows Systray. Click and you can tell EZ-SMART when to poll your drive and when to rattle your cage (for example, when free space dips below 10 percent). You can even set it to automatically load a repair or clean-up program. *Supports: Windows 95, 98, ME, NT4, 2000; \$30; www.storagesoft.com*



STORAGE: OPTICAL DRIVES

CD-R Inspector 1.2.3

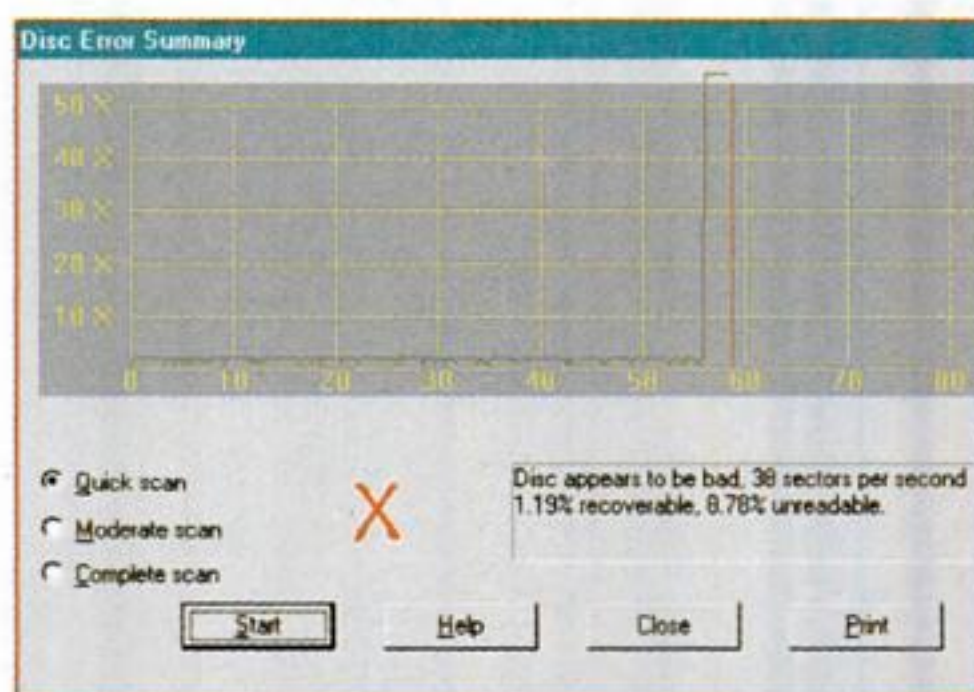
CD-R Inspector pulls back the veil on just about any kind of CD. Better yet, if an RW disc stubbornly refuses access to or won't even show a file, Inspector's advanced snooping tools may be able to get to it. Pop in a disc and Inspector immediately scans it. Click icons on the toolbar to run a battery of tests. There's thorough in-context help in almost every dialog box, explaining what a tool does, what results mean, and more.

So is Inspector worth the \$100? Depends on how much you really need to know about a disc. The program can reveal files and folders normally hidden from Windows view, supply table-of-contents details (type of track, start and end blocks, recording mode), display a readout of your drive hardware (from firmware version to multi-session support), and more. The key diagnostic is the disc error scan—basically a “worst case” scan of potentially unreadable areas of a disc. It flags errors you don't normally see because the drive is correcting them.

This is handy information if you're archiving vital data or if you're distributing discs to other people with different kinds of drives (hey, maybe the people who press the Maximum CD should be running this!). All in all, CD-R Inspector earns its keep. Consider it your first line of optical data defense. *Supports: Windows 95, 98, NT, 2000; all CD-ROM and CD-RW drives; \$100; www.cdrom-prod.com/software.html*

CD Data Rescue 1.1

CD-R Inspector covers a lot of bases, but if you need a dedicated CD-ROM, R, or RW resuscitator, CD Data Rescue is your pick. Just be prepared to grapple with a somewhat confusing interface. It's not clear where to start, and the various options aren't very obvious. But if you read the lucid, illustrated help file, you'll figure out the process. Your first step to resuscitation is scanning the disc—always pick the full setting or the program may miss hidden, damaged files. Pick which files/folders to recover, select a destination for the recovered goods, then click the button that matches how badly damaged you think the file is (your choices are Slight, Moderate, Severe, or Extreme). Click Go and



Dead disc spinning! CD-R Inspector's deep disc scan flags errors that haven't caused problems—yet.

the program does its thing—and darn well, too. *Supports: Windows 95, 98, ME, NT, 2000; \$40; www.naltech.com*



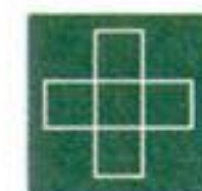
CPU's

Intel Processor Frequency ID Utility 3.9

Ever buy a PC at the local flea market and wonder if a 1.7GHz chip is really under that Malomarsize fan? Wonder no longer. Whip over to the Intel site and download this appallingly simple utility. Fire it up, and you'll instantly learn how fast that chip and system bus are really cooking, along with such cocktail party chitchat as the size of your L1Trace Cache in micro-ops. *Note: This tool only works on 533MHz and faster Celerons, 450MHz and faster Mobile Celerons, and P-IIIs and P-4s. Free; support.intel.com/support/processors/tools/frequencyid/*

Super Pi 1.1e

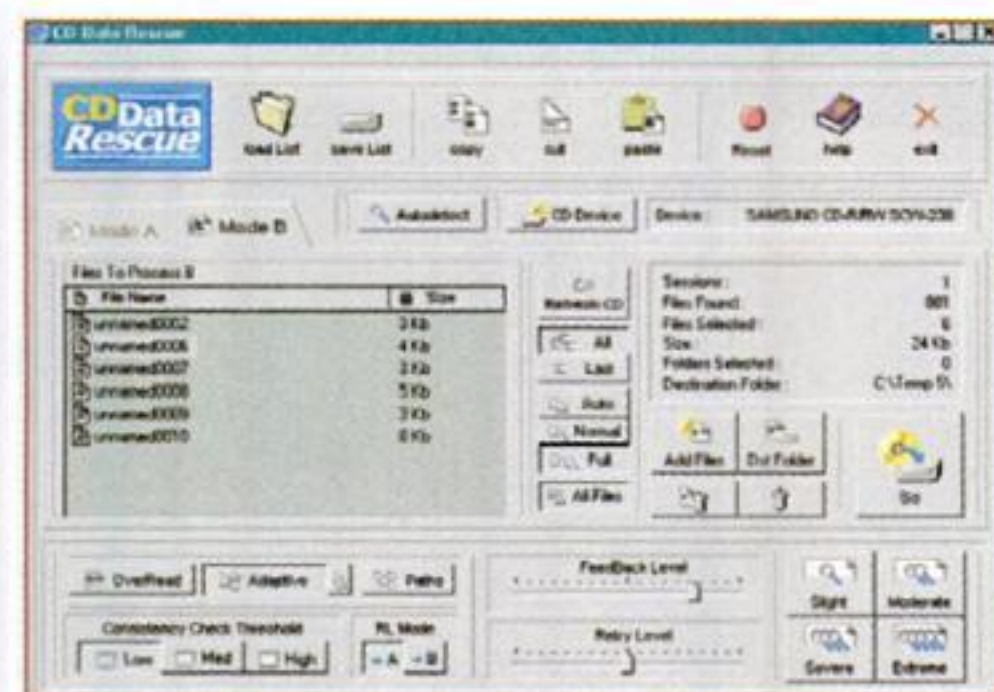
Has your CPU gone transcendental? One way to find out is to download this burn-in program used by overclockers of all ages. Super Pi, as the name implies, puts your CPU, memory, and hard disk through the wringer as it calculates the value of Pi out to 33.5 million digits. (Sorry—the world record is somewhere around 200 billions digits.) If you run the program to the end, it can take up to three days—plenty of time to see if your CPU is working correctly and properly cooled under pressure. *Free; www.overclockers.com/tips166/superpi.zip*



MEMORY

DocMemory 1.45a/2.0

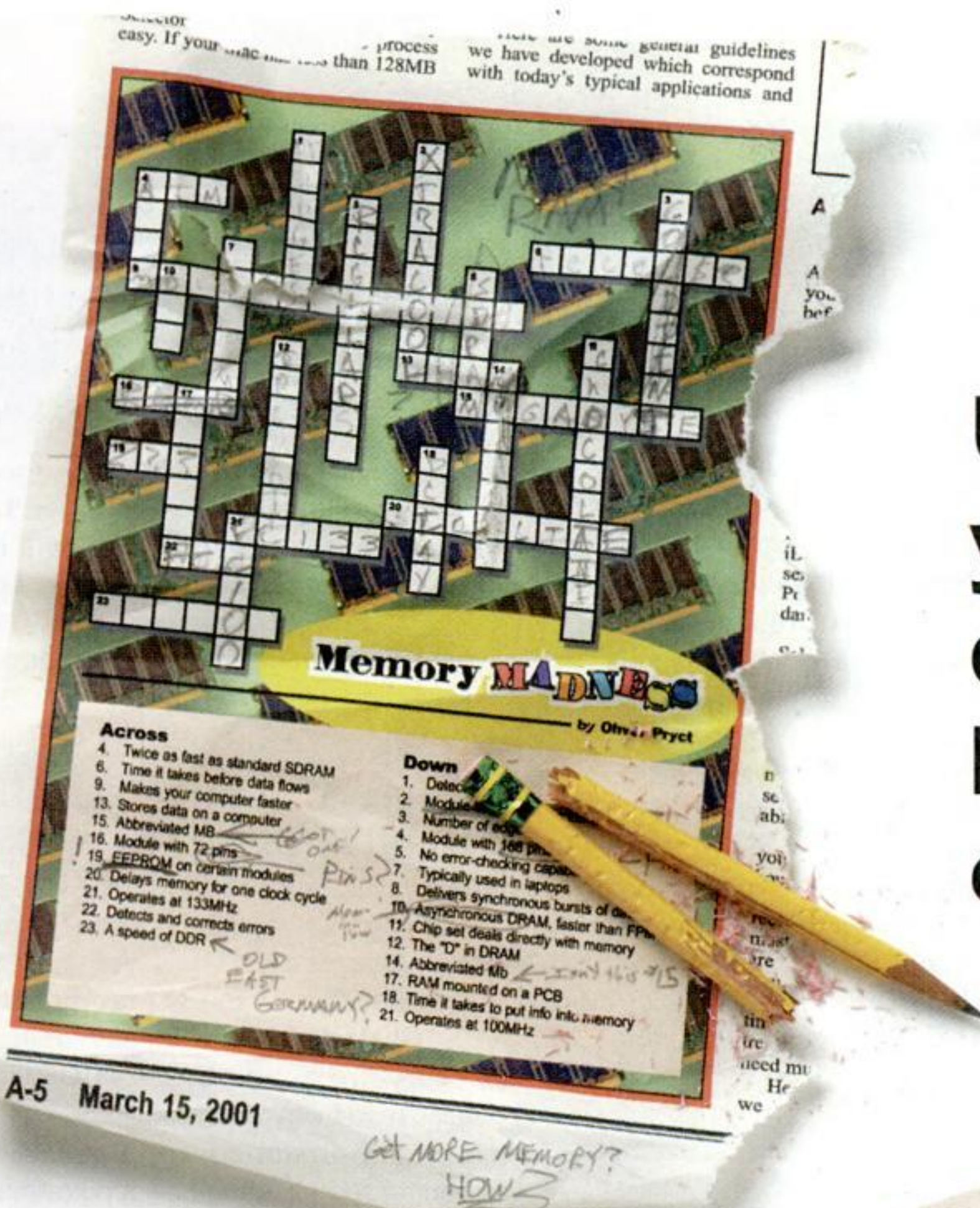
The makers of this RAM diagnostic tool exhort you to “Download Now! a \$100 value now



When errors trash your files, you turn to CD Data Rescue. Once files are found, you pick the severity level (slight to extreme) and click Go!

Your only
source for
factory-direct
DDR!

Upgrading
your memory
doesn't
have to be
complicated.



You need
Crucial RAM.

Select your system make and model at Crucial.com, and you'll find memory guaranteed to be compatible with your system or your money back. It's that easy! Best of all, you'll get the same top-quality memory the world's leading computer makers install in their systems. Visit Crucial.com and get great memory upgrades at low, factory-direct prices.

\$53⁰⁹ 256MB PC2100 DDR

Price reflects an automatic 10% discount for ordering online. Price was taken on 12/6/01 from Crucial's Web site; however, prices can (and do) change daily. Prices may vary according to specific system requirements.

© 2001 Micron Technology, Inc. All rights reserved. The Memory Experts is a service mark and Crucial Technology, the Crucial logo and Micron are registered trademarks of Micron Technology, Inc. All other brands and names used herein are the property of their respective owners. Crucial Technology is a division of Micron Semiconductor Products, Inc., which is a wholly owned subsidiary of Micron Technology, Inc. Phone 208-363-5500. Fax 208-363-5501. E-mail crucial.sales@micron.com. Crucial Technology is not responsible for omissions or errors in typography or photography.



Online discounts for over 87,000 upgrades at:
www.crucial.com
or call toll-free 1-888-363-5154

crucial
TECHNOLOGY
A Division of Micron
The Memory ExpertsSM

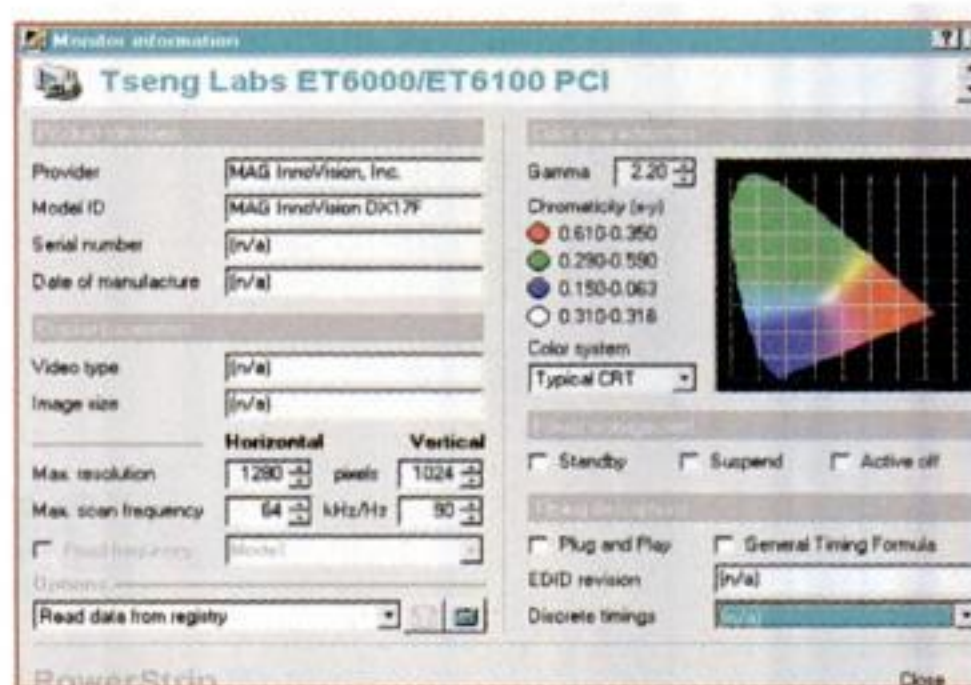
Copyrighted material

available FREE for only a LimitedTime." We're not sure it's worth a C-note, but as free tools go, it's pretty thorough. Boot off a DOS floppy, and *DocMemory* can run a suite of quick tests, as well as a repeating loop of all the tests, in the memory ranges you pick. The tests are as obscure as you'd expect: Walk 0s, Walk 1s, MATS+, Burst, CheckerBoard, and other patterns designed to see how accurately your RAM stores and reads back information. If bad RAM is found, *DocMemory* beeps and points out the errant chip's address. Shocking: The manual actually tells you how to interpret results and provides troubleshooting tips. Awesome! We appreciate any information that tells us more about how our PCs work. Supports: Windows 95, 98 (1.45a); ME, NT, 2000, XP (2.0); free; www.simmtester.com

RST Pro 1.31

OK, we're cheating here. We thought we'd sneak in a hardware tool, just to show you what they can do. Just be prepared to shell out some serious bucks. Although aimed at technicians, the RAM Stress Pro card is easy to install and use. Turn off your PC, plug the card into a free PCI slot, turn your PC back on, and when the card boots your PC, start picking options from the simple text menu.

With the push of a cursor key, you can: summon a simple memory map; get details on your RAM's size, speed, manufacturer, module type, and creation date (a good way to confirm you haven't been ripped off); and, of course, run RST's intense memory diagnostic. RST can beat up your cache and up to 64GBs (yes, *gigabytes!*) of system



PowerStrip is the über video-tweaking program—but it also reveals a ton about your hardware, such as this readout on a CRT.

tended burn-in, and benchmark RAM, cache, and CPU. And like any good card, RST Pro is flash-upgradeable. One word of caution: RST Pro can't help a system that won't do a power-on self-test (POST.) For that, you'll need geekier stuff. Supports: all SIMMs, DIMMs, and RIMMs (SDRAM 66-133, DDR 1600-2100, RDRAM 400-800), SRAM, ECC, Parity and Non Parity; \$500; www.uxd.com

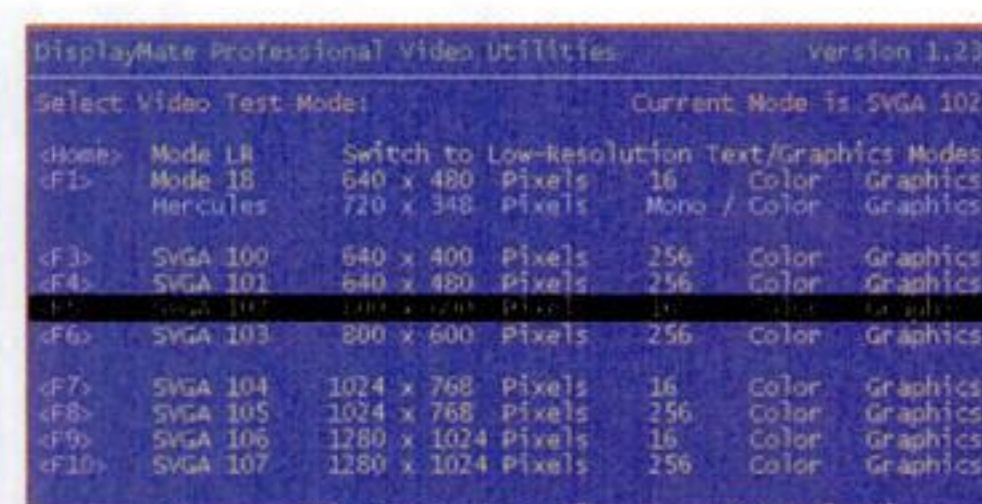
VIDEOCARDS AND DISPLAYS

PowerStrip 3.10.228

If you want your monitor to tap dance and change the baby at the same time, *PowerStrip* is your new best friend. This über tweaking tool supports multiple videocards and chipsets, and sports hundreds of video controls. If you're heavy into gaming, video production, graphics, and all things multimedia, *PowerStrip* must be in your medicine chest. But just remember: If you fiddle with the wrong settings (such as timing) or push your monitor beyond its stated specs, it'll probably shut down, and older

and cheaper monitors are at risk of even greater damage.

As a diagnostic tool, *PowerStrip* can tell you everything about your videocard (from device ID to AGP configuration) and your CRT (from chromaticity to timing). And, of course, there are tweaking tools galore. You can change the speed of your videocard's core and memory clocks, reclaim system memory, and so on. *PowerStrip* won't boost 2D video performance, but, yes, the program can be used to overclock for faster 3D gaming frame rates. Seek wisdom at www.entechtaiwan.com/faq.htm before going



DisplayMate is the video diagnostic that knows all. Once you pick, say, the video mode to test, *DisplayMate* will drag you through dozens of interactive screens.

wild. Supports: Windows 95 through XP; \$30; www.entechtaiwan.com

DisplayMate Professional for DOS 1.23

DisplayMate isn't a load-and-walk-away kind of diagnostic. You interact with the program at every step as it tests how well your CRT or LCD tosses stuff onscreen. At *Maximum PC*, we use its "Obstacle Course" for all monitor reviews.

As you'd expect, this is a DOS kind of program run from text menus and F-keys. But it's logically organized, and *DisplayMate* takes you through a retina-boggling retinue of tests, by category, with the press of a key. Each screen tells you what the test does, what results are acceptable, and how to adjust your monitor if they're not. The 370-page manual is a college course on display technology basics.

So what does *DisplayMate* test? What *doesn't* it test? Once you manually adjust brightness, contrast, and color (under the program's direction), it whips you through tests of color palettes, text, reverse video, intensity, color fading, sharpness, centering, flicker, moiré patterns, and more, all in a zillion different resolutions and modes. You naturally get a massive readout on your video hardware's specs. Bottom line: If you're a video jock, *DisplayMate Professional for DOS* is a must-have. Supports: DOS 2.0 or later, Windows 3.x, 9x, ME, NT, 2000, XP (in DOS emulation mode); \$250; www.displaymate.com

MODEMS

Modem Doctor for Windows 2.0.0.21

Is your dial-up modem dazed and confused? Yorking up stray bytes? *Modem Doctor* has the cure. The utility probes your modem's setup and tests its reliability (indeed, it found errors with our test unit). To work its magic, the software pummels your modem with AT commands, peeks into your S registers to uncover the modem's settings, checks fax and voice options, and much, much more. It can



RST Pro

memory nearly 30 different ways. The card confirms what chipsets your RAM works with, at all relevant speeds, and even simulates different OS access methods to pinpoint potential problems. If an error pops up, RST identifies the address. (Please note you'll need schematics to pinpoint the module and exact chip.)

RST is fast and lets you customize which tests to run, and on which range of memory addresses. You can loop tests, run an unat-

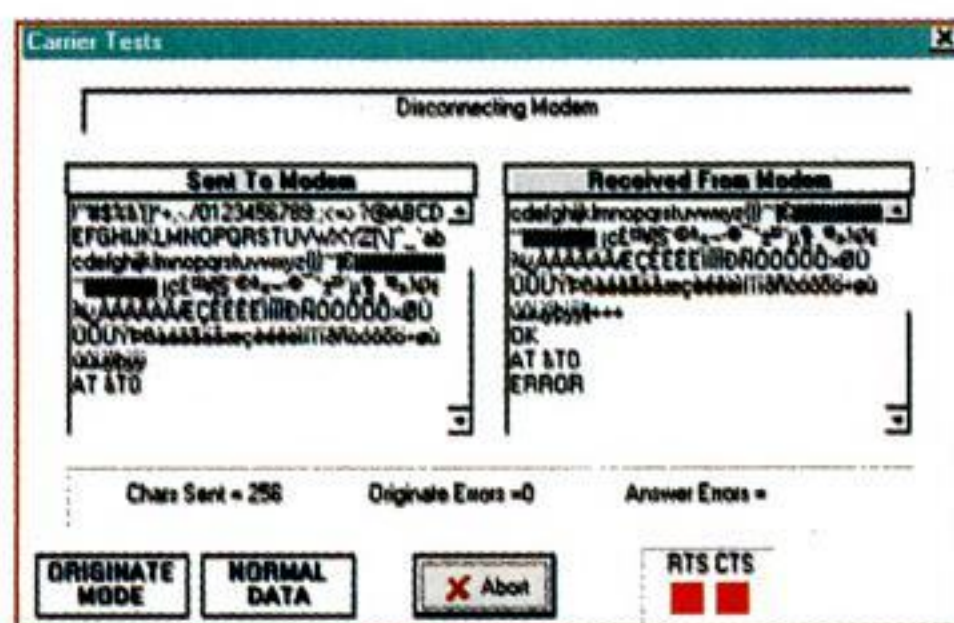
even flag a dying serial cable. Wonder what the warning "Modem does not return DCE info" means? *Modem Doctor's* detailed help file has the goods. One plus: You can reconfigure your modem without issuing obscure AT commands. You just check boxes in a dialog to reset your modem's factory settings, tell it to wait for a dial tone, shut off the speaker, set compression, and more. Neat. Neater still: *Modem Doctor* is way cheap. Supports: dial-up modems (PC, notebook, USB); Windows 95, 98, NT4, 2000; \$15; www.modemdoctor.com



PORTS, SLOTS, AND INTERFACES

ID v.1.0

ID lives up to its humble name. This free app scans your system and reveals basic details about your SCSI and ATAPI devices—ID, manufacturer, device type, and so on. If you lack a diagnostic suite and need this basic info, download this tiny 27K utility and go



Got modem madness? *Modem Doctor* is the cure. The program probes hidden settings and tests communications integrity by pouring different data patterns to and fro, and checking the results.

to town. Supports: Windows 95, 98, NT 3.51/4/5; free; grc.com/freestuff.htm

QuickTech USB

USB DOA? Find out why. Boot off the *QuickTech* floppy and connect a weird little hardware board to the USB port you want to test using the supplied cable. Pick the test options from



ID—simple and to the point. What ASPI and SCSI devices are in your system, and what are their IDs?

the text menu and let 'er rip. *QuickTech USB* will confirm that the port is working up to snuff and test transmission speeds and reliability, voltage (is there enough juice to run peripherals?), power fluctuation and noise (a sign of a faulty connection or USB power problems), and more. You can run tests in a batch in endless loops, pick what's tested and what errors to ignore, save the results to a file, and at the end, automatically shut down the PC. Very cool. Our only quibble? The manual doesn't offer much advice if your USB port has a problem. For that, seek out your local repair shop. Supports: USB compliant PCs; USB 1.1 ports; \$300; www.uxd.com ■

Robert Luhn is a freelance technology and science writer based in El Cerrito, California. He never wants to see a loop-back plug again.



"There, there, sweetie. I'll be back at 5 p.m. for a full Registry flush."

EMERGENCY 51!

A peek inside the Maximum PC Mobile Trauma Kit...

In the Lab, we've got all the tools we need to diagnose and fix an ailing PC—but it's been an entirely different story when making house calls. Thus was born the MPC Mobile Trauma Kit, a collection of every tool and spare part a *Maximum PC* editor might need to triage and revive a PC in crisis. If you ever encounter an infirm rig that requires anything more, pack it off to Rampart—stat!

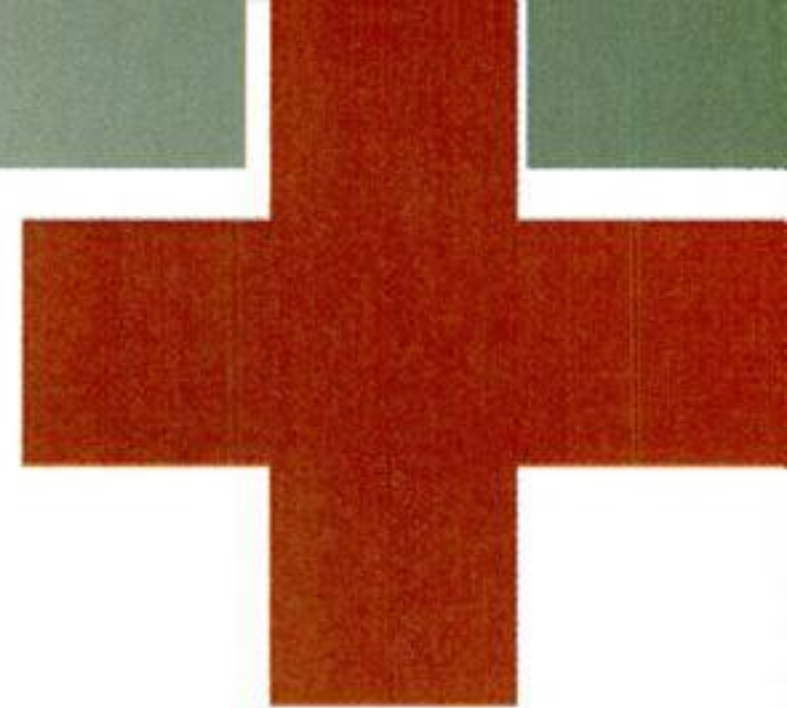
You can never have enough: You'll want a bounty of coarse-thread #6-32 screws to lock down PCI cards and button down the case; fine-thread M3 and #4-40 screws for the motherboard and hard drive; and a few of the rare 7/16 lag screws for mounting fans. We also pack an assortment of plastic, aluminum, and brass motherboard stand-offs for those times when we have to extricate and raise motherboards.

Let's get small: The oh-so-diminutive PFU Happy Hacking Keyboard Lite 2 (www.pfuca.com) will get you out of a jam when your patient's keyboard is DOA.

Drive amnesia: A Mitsumi floppy drive and a 60GB hard drive with copies of PowerQuest *Drive Image 5.0* and *Partition Magic 7.0* can be lifesavers when you arrive at an accident scene to find a hard drive with bad sectors.

Break the fever: To treat cases of common heat exhaustion, we whip out the AVC Sun Flower (www.avc.com.tw) for Pentium 4s and the company's skived copper heatsink for Athlon and Pentium III processors.

You never know when you'll need a spare fan belt too: A full assortment of pre-tested cables is crucial. We carry spare power, IDE, floppy, Ultra 160 SCSI, legacy SCSI, audio and USB cables, power Y-splitters, and a nifty compact crossover Ethernet cable from Everglide.



Software essentials: It's always wise to carry a stack of OSeS for times when you need to load a CAB file to complete a hardware installation. Also handy are a Windows 98 boot disk, a disk full of usual-suspect device drivers, and Ultra-X's RAM stress tester (RST) for testing system memory.

Getting wired: Sooner or later, you'll be glad you have on hand a Leatherman Wave, a good Ethernet crimper, a wire stripper, and a couple of small pliers and wire cutters.

Point and shoot: Raytek's ultracool MT4 infrared, non-contact thermometer (www.raytek.com) will immediately tell you if a CPU is running a fever.

Screw in, screw out: A SnapOn screwdriver, a couple of Torx-head drivers, and a few small screwdrivers (not shown) are more than sufficient for disassembling any PC.

Plastic fantastic companion: Plano's classic 747M trauma box features three sliding trays that let you access small items without opening the entire box. It also boasts a safety lock that keeps you from accidentally spilling the entire contents onto the floor. We bought ours from an EMS supply shop (www.buyemp.com).

Suture, please: Don't leave your patient with its wires hanging out! Wire ties and anchors with double-stick tape on one side separate the surgical pros from the quacks.

Surgical dressing: We keep a healthy selection of front bay covers, expansion slot shields, and even those freakish old-style P4 brackets handy for emergencies.

The Case Continues



An Open and Shut Case

+ Painful discharge



Ideal's Stat-Gard (www.idealindustries.com) plugs directly into three-prong outlets to ensure you're getting a proper ground and even checks the circuit to see if it's properly grounded.

+ Pacemakers



These 3-volt batteries keep power going to the computer's CMOS when the system is unplugged. Unless you're trying to resuscitate a true dinosaur, the CR2032 button cell is about the only PC battery you need these days.

+ Rubber baby buggy jumpers



You'll want to keep a handful of 2.54mm motherboard and optical-drive jumpers, as well as the hard-to-find 2mm jumpers used in some hard drives to set their master/slave assignments.

+ Organ donor



We lifted a power switch, speaker, and power LED from an old PC. You'll need these small parts when you have to test a problematic motherboard that's no longer attached to its host case.

+ Burn ointment



Arctic Silver II thermal compound (www.arcticsilver.com) is considered one of the best substances for keeping a CPU in contact with a heatsink. A slightly less efficient but non-conductive version called Arctic Alumina is also available.

+ Mouse in the house



Logitech's tiny Mouseman Traveler (www.logitech.com) lets us access a PC's PS/2 or USB ports when we need cursor control, and the Traveler's optical sensor doesn't require cleaning.

+ Tricky NIC



Besides the ubiquitous 3Com 3C905 PCI NIC, we also pack an older D-Link DSB-650 USB Ethernet adapter (with drivers on diskette and CD-R) for quick connection to the Internet to download essential software we'd otherwise be without.

+ Power struggle



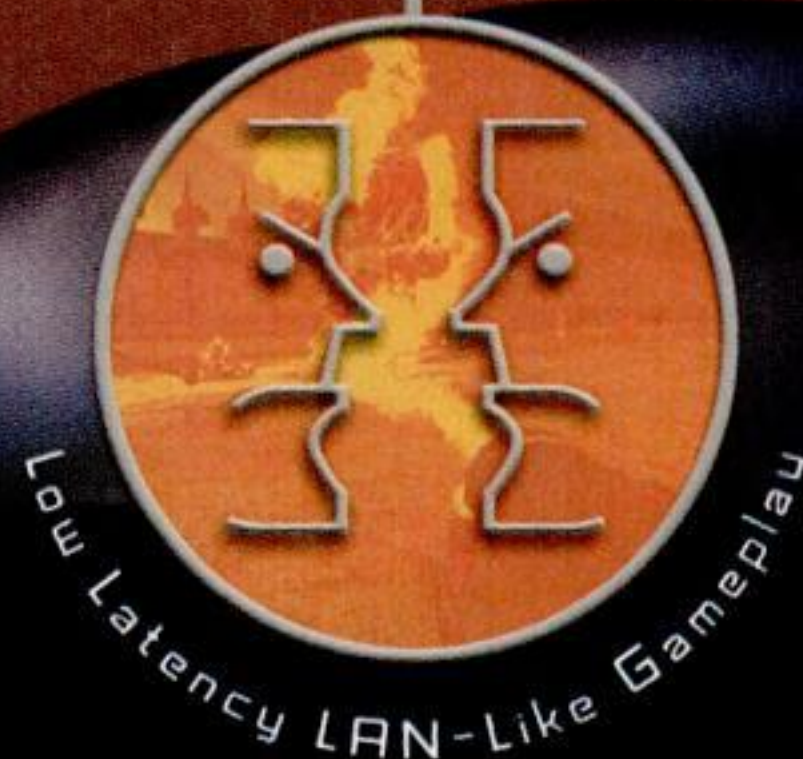
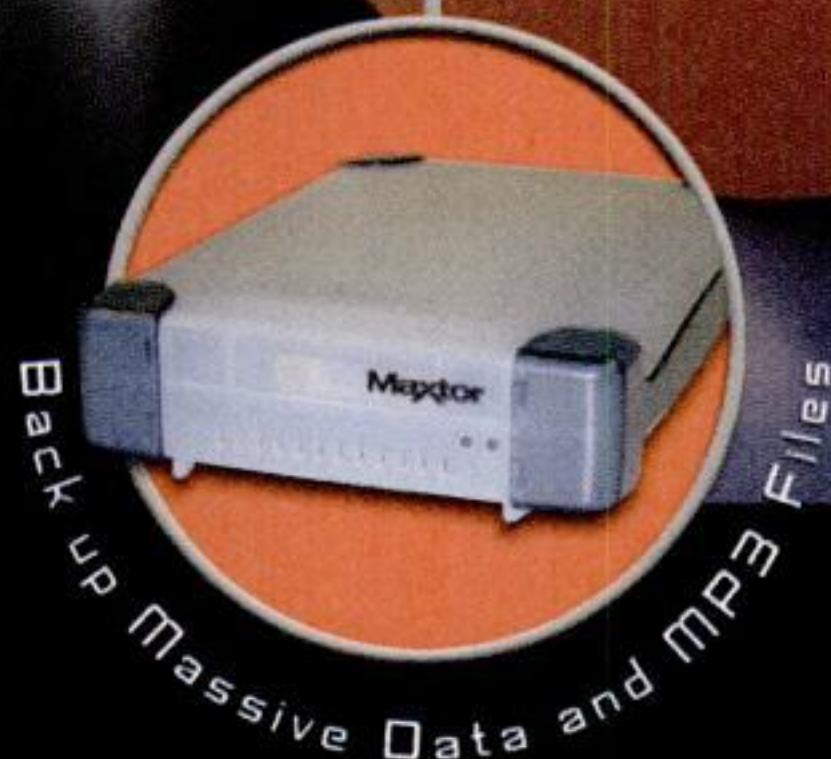
PC Power and Cooling's ATX power tester (www.pcpowerandcooling.com) places a load on a power supply to see if it's the cause of a comatose PC. Simply unplug your power supply from the motherboard and into the tester. ■

Sound
BLASTER

AUDIGY™

24-bit Audio that will Astound you...

Connectivity that will Empower you



Sound Blaster®
Audigy™ Platinum eX
with dual SB1394 ports

Sound Blaster® Audigy™ offers stunning audio quality with 100dB SNR, 24-bit audio clarity and EAX® ADVANCED HD™ effects. Combine that with the power of the integrated SB1394™ port and you have the definitive PC audio solution. The SB1394™ offers optimum performance and speed by allowing you to connect up to 63 other IEEE® 1394 enabled devices including external hard drives, hi-speed CDRWs and other Sound Blaster® Audigy™ cards. With an amazing transfer rate of up to 400 Mbps, it enables you to seamlessly transfer/back-up massive MP3 collections, enjoy low latency LAN-like multi-player gameplay and PC to PC networking and also hook up your DV Camcorder to edit your home videos.

Learn more about Audigy™ ADVANCED HD™ and SB1394™ at www.soundblaster.com.

©2002 Creative Technology Ltd. The Creative logo is a registered trademark of Creative Technology Ltd. in the United States and/or other countries. All brands or product names listed are trademarks or registered trademarks and are property of their respective holders.



CREATIVE

Copyrighted material

MADE IN THE Shade

It's been 10 long months since we first celebrated the awesome promise of pixel and vertex shaders—and 10 long months without a single PC game that takes advantage of the new 3D acceleration technology. But this month, the wait is over! We give you Aquanox and Ballistics, the first two PC games to unlock the power of programmable shaders.

BY **BILL McCLENDON**



AQUANOX

THIS UNDERWATER DIORAMA SHOWS OFF MUCH OF *AQUANOX*'S SHADER BRILLIANCE IN ONE FELL SWOOP.

1: Surface reflections on these "pills" are done using pixel shaders. Environment mapping (that is, mirror-like reflections of a surrounding environment) are also introduced in the game, where applicable.

2: Level-of-detail calculations, in conjunction with pixel shaders, reduce the detail of distant objects without compromising visual quality.

3: Bump-mapping—such as that used on the surface of this vehicle— isn't a chipset-based feature any longer. Pixel and vertex shaders can now be programmed to display this effect. It's important to note that bump-mapping looks best when you're actually playing a game and objects are in motion: Light reflecting off the bumps changes accordingly as an object shifts position.

CONTINUED ON NEXT PAGE >>



AQUANOX: Notice how this platform is much more obscured closer to the sea floor? You can thank realistic volumetric fog, which is applied using vertex shaders. The density changes depending on the fog's height.

The advent of DirectX 8, nVidia's GeForce3, and ATI's Radeon 8500 changed forever the rules of 3D acceleration. The traditional 3D rendering pipeline is now obsolete—game developers are no longer limited to the cookie-cutter effects that are hard-coded directly into a videocard's circuitry. No, in the new world order, developers can program their *own* effects, for a near-infinite variety of dazzling looks and feels. It's a "simple" matter of programming pixel and vertex shaders. You can learn all about these shaders by referring to our April 2001 cover story, but for now we invite you to check out our reviews of the first two PC games to leverage shader power. Unfortunately, the story you're about to read is all too typical: Even awesome graphics can't compensate for limited or flawed gameplay.

AQUANOX

Aquanox is the sequel in name and theme to 1997's *Archimedean Dynasty*. The bad old Bionts from the previous title have long since been vanquished, but now there's a new threat in the deep blue sea. Playing as freelance mercenary hired-gun loose-cannon Emerald Flint, your ship is stolen before the game even starts, requiring you to go into hock just to buy a beater. At least this explains why a successful mercenary has to drive such a junky underwater hooptie at the get-go.

For lack of a better phrase, we'll call the game a "first-person swimmer": You navigate plankton-rich waters, attack, and evade. The game is unbearably story-driven, with incredibly lengthy between-segment videos, tedious expository text and voiceovers between missions, and huge chunks of in-engine mini-cutscreens during missions. The execution of the story itself is pretty much gravy, though: You can nonchalantly key your way through the Talk options between missions (you need to talk to certain people in order to get paid), and it doesn't affect gameplay at all. In fact, the forced, wooden voiceovers are so painfully bad, you'll want to get back to the action as soon as possible.

Aquanox follows the typical "kill enemies to earn money in order to get better stuff" formula, and does so exceedingly well. You'll always want to check the upgrade shop between missions to make sure nothing new or better has popped up for sale. One nice aspect of shopping is that you can sell your gear back to the shop for the exact price you bought it for, which means you can retrofit your existing ship without losing any money on the deal. You have torpedoes, direct-fire machine guns and lasers, and heavy-duty missiles to choose from, along with a decent variety of ships. There are clear winners in each of the shopping categories, so once you land one of the good weapons, you'll rarely need to switch. While this makes for quicker kills, it doesn't promote variety in your arsenal.

Gameplay is about as straightforward as it gets: You swim to various navigation points and blow up stuff. Sometimes you have to escort ships (which involves blowing up enemies), and sometimes you have to defend certain buildings (which means blowing up attackers). Other times you get to battle bizarre sea-beasts, which are so huge you have to pick off their component parts console-style. The physics in the game are extremely action- and first-person oriented. In fact, first-person is the best way to play this game. Use your mouse and keyboard and circle-strafe around enemies. While your ship is afforded six degrees of freedom, you don't even need it—you can play the entire game by moving in the four traditional directions.

Of course, the big selling point of *Aquanox* is its graphics, and we're not going out on a limb in saying this is easily one of the prettiest damned games we've ever played. Aimed squarely at next-gen videocards, *Aquanox* is a joy to behold. The lighting effects in particular are extremely well done, and you get bump-mapping, high-resolution textures, and models with staggering polygon counts tooling around in the briny blue. It's too bad this comes at a price, and that price is stability—our review version of *Aquanox* sure did like to crash to the desktop.

If you want an underwater sim with a deep, compelling story of love and discovery, *Aquanox* ain't it. But if you want to swim in some of the most beautiful and lush environments ever seen on the PC and blow up everything in sight, this baby's for you.

DREAMY: Have we mentioned it's gorgeous? It's also accessible, boasts lots of action, and, of course, shows off the power of programmable shaders.

DREARY: The out-of-the-box code was unstable, the story line plays like it's tacked on, and, jeez, those horrible voiceovers.

MAXIMUMPC VERDICT: 7

\$40, Massive Development, www.aquanox.de

BALLISTICS

When you play *Ballistics*, you can almost hear the development team voicing its overriding goal throughout the entire design process: "Yes, that's fine—but how do we make it go faster?" Games like *Wipeout XL*, *Forsaken*, and (for you old-schoolers) *S.T.U.N. Runner* used the same basic principle: Strap the player into a futuristic vehicle to race as fast as reflexes will allow. Speed is king, and the faster the better.

At its heart, *Ballistics* is a straight-up racing game with

the obligatory tacked-on story. It's set in the future, and sports fans are looking for blah blah blah... whatever. You jump into the game and check out your ride—in this case, a sleek, jet-powered suicycle that has a surprising number of variable characteristics such as mass, boost, cooling, and acceleration. The standard formula applies: Win races to get money, and use that money in the shop to upgrade parts. Your new upgraded bike helps you win more races, which... well, you get the picture. In a game as visually rich as *Ballistics*, it's no surprise that each modification to the bike—even the aerodynamics of the seat—markedly changes the bike's appearance. Too bad this change is only really visible in the shop.

The game provides a total of seven tracks (some of which must be unlocked by, you guessed it, winning races), but they're hardly typical. In the world of *Ballistics*, racing takes place not on flat or banked tracks, but in tubes. The bikes are magnetically attached to the sides so they can rotate a full 360 degrees and attain the highest speeds possible. In the easiest mode, the game automatically reattaches you to the tube should you become disengaged. But in the higher difficulty levels, you'll have to do that by holding a button. Use a gamepad for this one, folks.

Acceleration is key, and yellow "booster pads" give you a temporary charge, while a "super booster" is intended for more serious situations. Yeah, right. In actual practice, you go from one booster pad to the next, holding the super booster

button down the entire time, trying not to run into things that'll explode on impact. One thing *Ballistics* does—and does extremely well—is simulate the sensation of speed. Most games let you go 200, 300, maybe 400 miles an hour. *Ballistics* starts in this neighborhood, and if you can get the track rhythm down, Mach 2—complete with the sonic boom and visual effects—is more than attainable. After 15 minutes or so at Warp Factor Five, you'll be giggling like a schoolgirl—and trying to top your best speed on the next run.

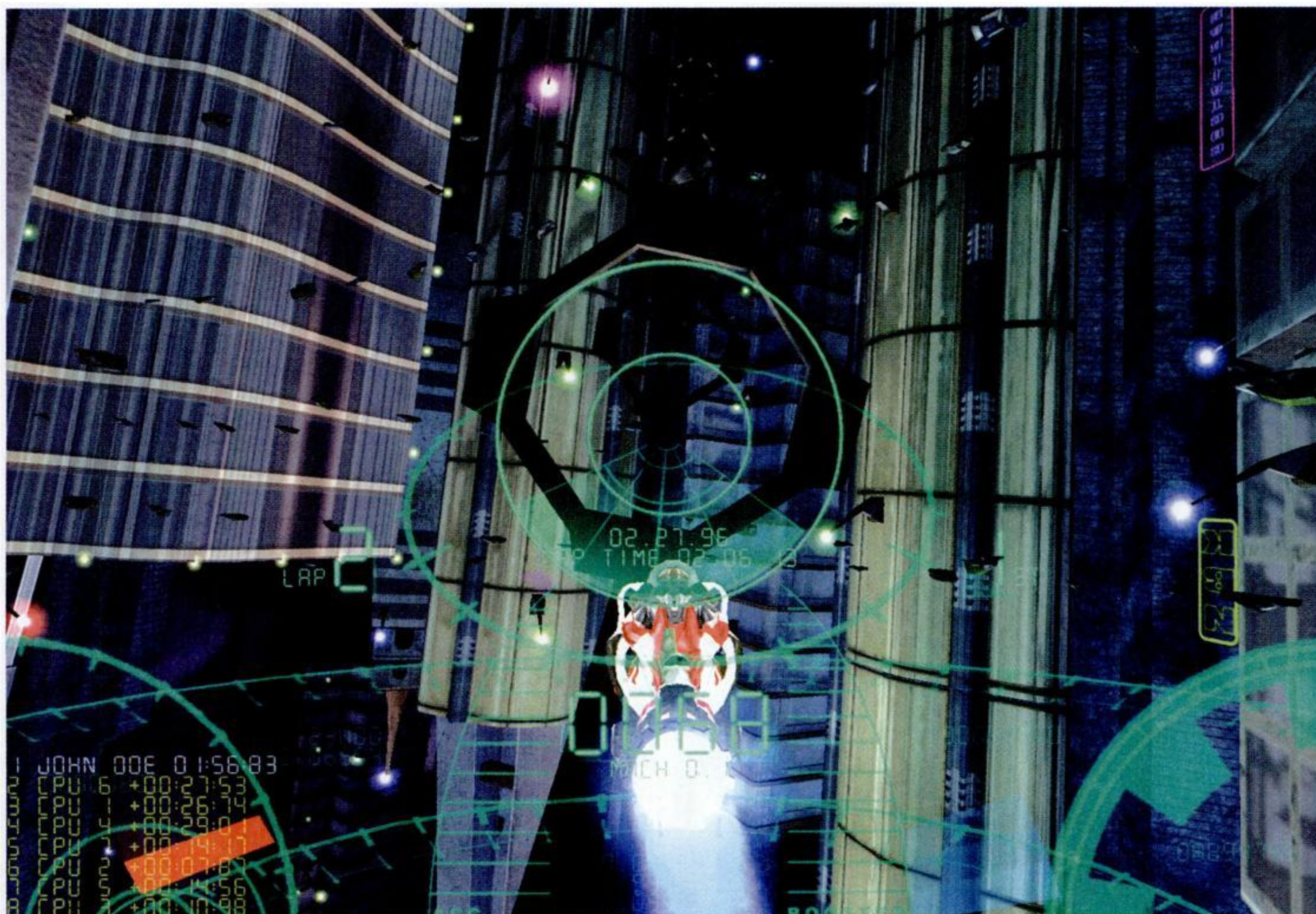
With such simplistic gameplay, a game must by necessity have something special going for it. In *Ballistics*, that thing is graphical splendor: lots of it, all the time, and always on. If you have a DirectX 8 videocard (you do, don't you?), crank up that bad boy to the Extreme setting and let it rip. Amazing reflective surfaces, transparencies, lighting effects—*Ballistics* is like a checklist of Eye Candy Approved features. It's almost a shame you're always blasting along at more than 1400mph; when you smack into a wall, remember to steal a moment to take in all the beauty. ■

BEST OF SHOW: Stunning graphics, and sheer, unadulterated, giddy speed. It's also easy to simply load and play without hassling with any learning curves.

WORST OF SHOW: Not a whole lot of "there" there. Repetitive. Not a lot of fun on the higher-difficulty settings.

MAXIMUM PC VERDICT: 7

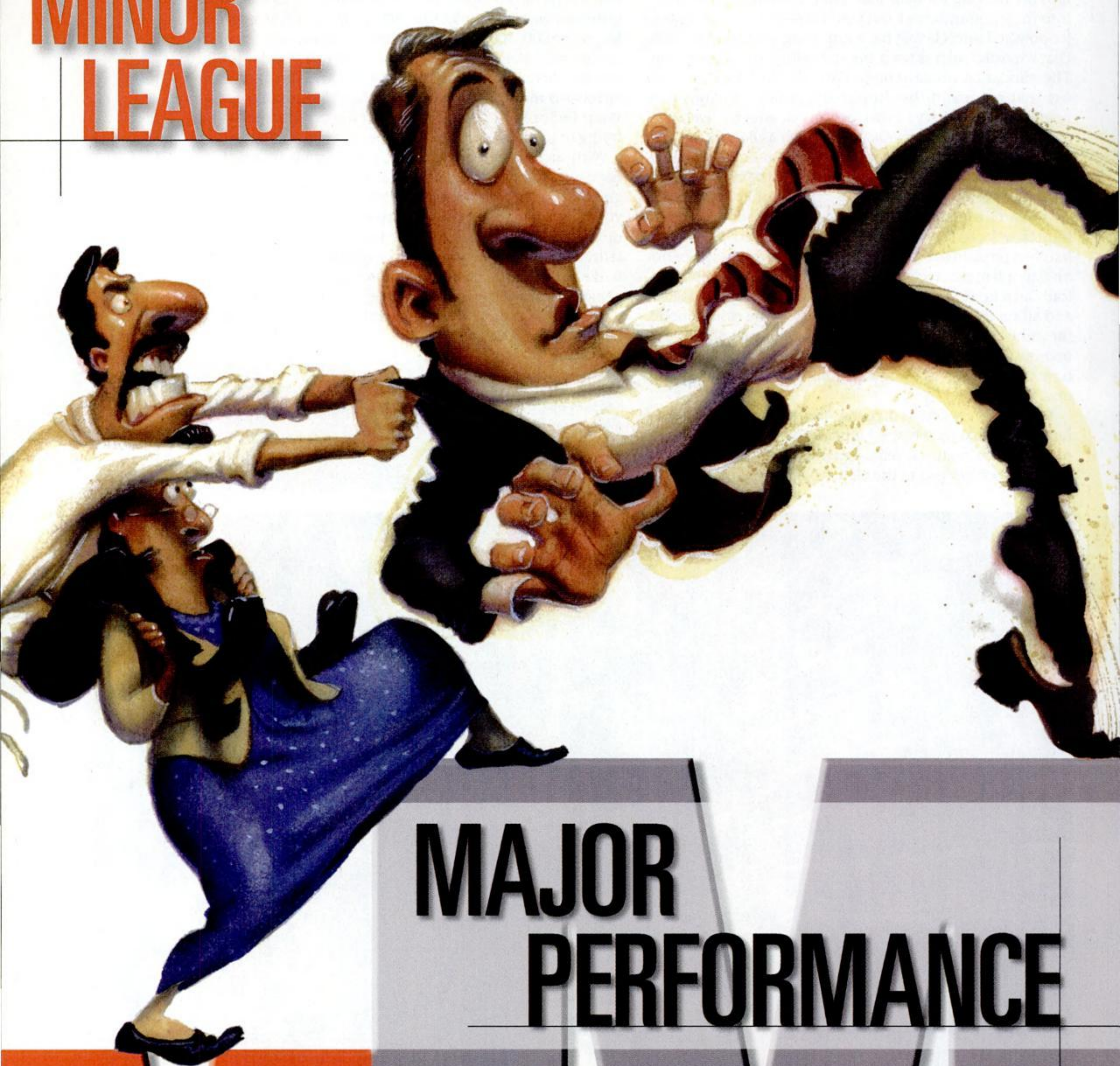
\$30, GRIN/Xicat Interactive, www.xicat.com, 954.522.3900



Pixel and vertex shaders allow *Ballistics* to display special effects like reflections, refractions, motion blurs, and heat waves without compromising CPU resources. Here's an explanation in the developer's own words: "In this shot, you can see a typical outside scene where more than 200 vehicles move around the skyscrapers. The pixel and vertex shaders are used for the rendering offload as well as for the reflection and environmental mapping of the skyscrapers, the 200

cars, and the Speeder you control—this becomes more obvious when you move through the scene, of course. In the bottom-left corner is a small shot of the classic *Ballistics* checkpoint effect. This effect distorts a passing object, its particle streams, and the background, and also takes a small reflection from the area in front of the checkpoint and displays it in a realtime generated energy field. When in motion, it provides a dizzying effect, to say the least."

MINOR LEAGUE



MAJOR PERFORMANCE

BY LOGAN DECKER,
GORDON UNG,
AND WILL SMITH

Can mom 'n' pop system vendors build better PCs than the big boys? That's exactly what we wanted to find out. Submitted for your approval, reviews of nine systems that are poised to topple the PC establishment.

We all know what we can get from the monolithic PC giants—the Dells, the Gateways, and the Compaqs of the world. But more likely than not, there's a smaller PC vendor just a phone call away who can provide that extra bit of TLC that turns a mere fast machine into an overclocked screamer. So we asked a handful of these "independents" to let us review the finest systems they could offer *Maximum PC* readers. Our ground rules were simple:

1. The vendors had to send us the exact same systems they would sell to the general public. For example, the mom 'n' pops weren't allowed to overclock their CPUs or videocards if they wouldn't do so as a matter of standard sales policy. Same goes for BIOS tweaks and cases detailed with nail polish.
2. The vendors weren't allowed to send us monitors and speakers. Why? Because we didn't want them sending us dime-store displays and sound systems in order to lower their overall system prices (so please note that all prices you see in this article are for the main boxes only).
3. The vendors were asked if they could handle the production of 80 additional machines within a month of this article's publication. If they couldn't, we would still review their machines and their final verdicts wouldn't be adversely affected, but we would warn the public about the production limits. As it turns out, all vendors stated they could handle 80 additional machines per month.

Once we got all the rigs in house, we began to notice patterns: All but one vendor used AMD's Athlon XP CPU, taking advantage of its competitive speed and far lower price than Intel's Pentium 4. And all but one vendor included two hard drives in a RAID 0 array (but just wait until you read what the non-RAID system pulled off). Most of the shops went with GeForce3 Ti 500 videocards, and all but two vendors knew that savvy buyers want to see the name "Plextor" in their optical drive bay.

Clearly, the small mom 'n' pop shops know what power users and gamers want, and are willing to go the extra mile to deliver specialized components and tweaking techniques that the big boys can't be bothered with. And, luckily, the scrappy vendors also back up their overclocking sleight-of-hand with strong warranties.

Now, let's step into the Lab to see how these renegade rigs performed...

NextGen's AMD XP

Ready for overclocking—and brother, it needs it

NexGen took pains to prepare its AMD XP Performance System for overclocking—the rig came equipped with a blue chipset heatsink and fan, and the monstrous Swiftech MC462-A CPU cooler. So it's a little strange that the company didn't overclock. And a shame, because the AMD XP Performance System could have used it.

Like most of the systems in this showdown, the AMD XP includes all the right gear: the fastest shipping Athlon, 512MB of RAM, a 24x Plextor burner, a 16x Pioneer DVD-ROM, an ASUS mobo using the KT266A chipset, an Audigy Platinum EX, a Leadtek GeForce3 Ti 500 videocard, and a pair of 60GB 60GXP IBM hard drives. The configuration of the IDE RAID had us baffled, however. Instead of running the two IBM drives on separate IDE channels, NexGen has the drives sharing the bandwidth of a single IDE channel, which can seriously degrade performance. The company did the same with the optical drives and combined the Plextor and Pioneer on one channel as well. This can drastically impact high-speed disc-to-disc dupes.

It's possible that the shared drive configuration hurt the performance of the system in the disk-intensive *SYSmark2001* benchmark—NexGen's score trailed that of the Overdrive PC (page 48), even though the Overdrive has a slower CPU. But the NexGen did come back into favor in our *3DMark2001* test, where it finished just behind the Patriot (page 46) along with two other systems. NexGen has fine components and the right features for people who want to overclock, but its price-to-performance ratio and oddly configured RAID controller dragged it down—way down—in this roundup.

MAXIMUM PC VERDICT: 5

\$2,840, 561.881.4415, www.systemquote.com



Phat fan: This Swiftech fan/heatsink combo is so large and fast it needs to be mounted directly to the chassis, not just your motherboard.

Breathing room: NexGen put more than an inch of space between the hard drives and added an 8cm fan to blow air across the drives.

■ Element PC Patriot 1900

Overclocked and over the top

The Patriot 1900+ arrived in a box so big we could bury someone in it—like, say, the competition, which got stomped in the benchmarks by the Patriot's heavily overclocked processor and videocard.



The Athlon XP 1900+ overclocked to 1.67GHz was a predictable plus, but the real jewel of this system is MSI's K7T266 Pro2 mobo, featuring an onboard Promise RAID controller (leveraged by two 80GB Maxtor D740X drives in a RAID 0 configuration) and built-in USB 2.0 (the Patriot was one of just three systems to include the new USB standard). The interior wiring was tidy, with no dangling cables. The only disappointment was the Hercules Game Theater XP, which is passe soundcard technology compared with the exquisite fidelity of the Sound Blaster Audigy's digital-to-analog converters.

The Patriot's overclocking paid off in spades, delivering an unprecedented 193 in our *SYSmark2001* benchmark. We were concerned about the stability of the system, but the Patriot never faltered under hours of looped *3DMark2001* stress testing, and Element PC backs up its bravado with a full-year warranty that covers all components (parts and labor).

Though the Patriot is obviously configured for PC fanatics, its thorough documentation leaves nothing to chance, providing lucid instructions on everything from positioning the system for optimal ventilation to flashing your BIOS. We even received a boxed copy of *Windows XP Professional*! How's that for PC populism? Indeed, the Patriot is a first-rate system priced for average Joes.

MAXIMUM PC VERDICT: 9

\$2,600, 888.325.2661, www.elementpc.com



Brain food: According to the company's CEO, the Element PC concept was developed over weekly discussions while munching on Wendy's Spicy Chicken sandwiches and Coke (no ice).

Cable tamers: The chicken sandwiches paid off—the smart folks at Element PC used the spare drive-rail holders to secure the IDE cables.

■ GMachines Omega AMD

Overclocked speeds without overclocking

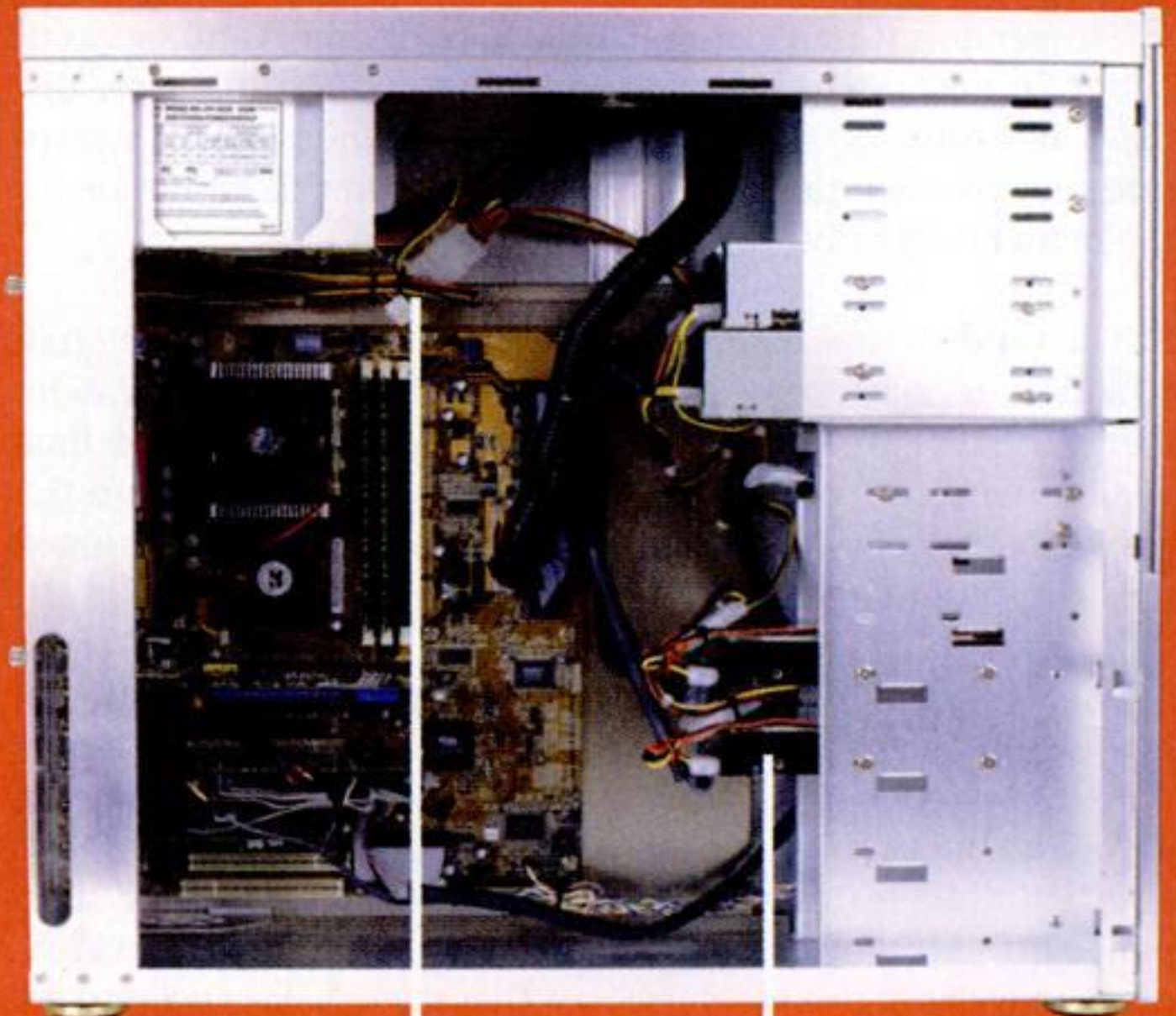
GMachines' Omega AMD has a lot going for it right out of the gate. In *SYSmark2001*, the Omega's non-overclocked 1.6GHz Athlon XP 1900+ ran neck-and-neck with XDream's 2GHz P4 and not far behind the blistering speed of Element PC's slightly OC'd Patriot. And while *Maximum PC* is always down for a little fun, we think Element overstepped the fine line of appropriate flag display with its decals, and most of the staff would rather have the sleek and polished Cooler Master case that GMachines uses.

Internally, the Omega AMD is pimped out with an ASUS A7V266-E motherboard (featuring VIA's desirable KT266A chipset), a Sound Blaster Audigy Platinum EX, a Visiontek Xtasy 6964 GeForce3 Ti 500 (overclocked to 260MHz on the core and 267MHz on the DDR memory), a Plextor 24x burner, and IDE RAID 0. Oddly, GMachines' choice of hard drives leans toward the diminutive with just two 40GB Seagate Barracuda IV drives. Internal case wiring was pleasant, but not exactly Voodoo-level, and even though the Cooler Master case is well-vented with four 8cm fans (two in the front bezel, one behind the CPU, one up top), the aluminum-only, low-velocity heatsink attached to the CPU doesn't lend itself to overclocking. On the flipside, the Omega AMD is quieter than most of the rigs in this roundup and less likely to rattle your nerves.

The Omega AMD is a solid performer with top-of-the-line components, and we suspect it fell slightly behind in performance benchmarks only because GMachines chose not to overclock it. Of course, considering its CPU cooling apparatus, overclocking probably would have been ill-advised.

MAXIMUM PC VERDICT: 9

\$2,570, 877.677.7383, www.gmachines.com



Good housekeeping: GMachines does a fair job of cleaning up the wires that cluttered many of the machines here.

Size does matter: In an age when you can get 120GB of storage in a single hard drive, a pair of 40GB drives just seems quaint.

FALCON MACH V



THE DEFINITION OF "AIR SUPERIORITY"

"If you thought the end of the Cold War meant a halt to weapons R&D, think again. Falcon Northwest's new MACH V proves that plenty of cash continues to flow into the campaign against the tyranny of slow 3D Gaming. Like a freshly declassified fighter-bomber, the system swooped in and precision-bombed nearly every benchmark record in existence." VERDICT: 10/10, Kickass Product Award,

Gear of the Year (Best Desktop System)

-Maximum PC

"In total, we evaluated 7 power and 11 value systems... Falcon Northwest's MACH V game machine is the unrivaled speed champ in this lineup. ...the (Athlon XP 1800+) MACH V we tested scored a 121 on PC Worldbench 4, setting a record for performance and beating the fastest Pentium 4 system we tested by 14 points. This system is fast and fun." TALON 3.1: "...this Talon posted a stunning PC Worldbench 4 score of 116, second only to another Falcon - our power list's (MACH V)"

- PC World

"FALCON SETS A NEW HIGH-WATER MARK WITH ITS BEST-EVER PC The Falcon team have always been excellent system builders, but this new computer is the cleanest, best-cabled model we've ever seen from them. It's Falcon's best MACH V to date. We're smitten." Score: 95%, Editor's Choice Award

- PC Gamer



1-888-FALCON-1
WWW.FALCON-NW.COM



■ XDream Nightmare³

You will learn to fear the power of the cube

The XDream box was the only system in this roundup to ship with a Pentium 4, as well as the only system to include RDRAM instead of DDR SDRAM. But the most noteworthy aspect of this rig is its measurements. The folks at XDream managed to cram a lot of goodness into this 13x18x14-inch shiny black cube.

It's truly a thing of beauty. Boasting an airflow design that cools the memory, CPU, videocard, and hard drives, as well as 10 3.5-inch drive bays and more than enough space for all but the largest ATX mobos, the XDream's case is our fave in this showdown. Although the funky interior design doesn't lend itself to a fancy wiring job, the cables were still arranged so as not to interrupt airflow.

Sporting a 2GHz Pentium 4 on the ASUS P4T mobo and 256MB of PC800 RDRAM, the XDream turned in respectable third-place performances in our *MusicMatch*, *Quake III*, and *3DMark2001* benchmarks, but fell behind to fourth in *SYSmark2001*. The super-special Plextor Plexwriter 24/10/40, which ships with a black faceplate and tray door, chalked up the second fastest score in our audio extraction test.

Our biggest gripe with the XDream—and it's a big one—is its high price. We understand that P4 systems cost a little more, but maybe that's why all the other vendors went with AMD (and many of these Athlon rigs turned in better benchmarks). The XDream costs damn near \$3,200, and that's just too much for a box with no monitor or speakers.

MAXIMUMPC VERDICT: 8

\$3,175, 877.622.4469, www.xdreammachines.com



Knock it for the socket: Oddly, XDream uses an outdated Socket 423 mobo instead of the current Socket 478 standard that's upgradeable.

XDreamly small: Short and squat is what we like. The XDream box is the same size as a Klipsch 5.1 subwoofer.

■ Overdrive PC OPC-XA7

Middle-of-the-road performance in a generic case

Even though the OPC-XA7 uses one of the slowest processors in this roundup, Overdrive PC managed to squeeze out an impressive amount of performance from the Athlon XP 1800+. Sadly, no amount of squeezing could elevate the OPC-XA7 above the competition.

Featuring an Abit KG7-RAID motherboard (which features the AMD 761 chipset) and a two-disk RAID array, the OPC-XA7 landed squarely in the middle of the pack with a *SYSmark2001* score of 187. And with its Visiontek GeForce3 Ti 500 board overclocked to 275.5MHz, the OPC-XA7 again managed to land exactly in the middle with a score of 30fps in *3DMark2001*. Haunting, isn't it? We were unable to complete our *Audiograbber* test, as the Plextor 24x repeatedly returned mysterious ASPI errors.

Inside the bland Antec case, we found a few unexpected surprises. First, every cable inside the box was fastened with Velcro ties, which keep the cables nicely bundled and manageable. Second, the blowhole fan on the case door drew power through a headphone-style jack, which makes removing the case door much easier than if the fan drew power using a standard power mount. The Overdrive is also one of the few systems to include USB 2.0 ports, so you'll be able to take advantage of imminent USB 2.0 devices without opening your case.

Although Overdrive did a competent job of putting its hardware to good use, in the end, the OPC-XA7 (wasn't that the name of the Star Wars robot?) couldn't compete with brainier—though similarly priced—contestants.

MAXIMUMPC VERDICT: 6

\$2,595, 770.734.9220, www.overdrivepc.com



Overdriven: The overclocked Visiontek Xtasy 6964 pushed the OPC-XA7 into second place in *3DMark2001*.

Wrap it up: Overdrive PC used Velcro ties to keep all the wires tidy, untangled, and less likely to be snagged.

Computer HQ PowerPlay

Pretty on the outside, ugly on the inside

When we unpacked the PowerPlay XP1900, the first thing we noticed was its awesome Cooler Master ATC 210 case, with its swank clear acrylic door on the front bezel. We were far less impressed with what we found behind the door. With middling benchmark numbers and a downright craptastic wiring job, the PowerPlay's pretty case is about all it has going on.

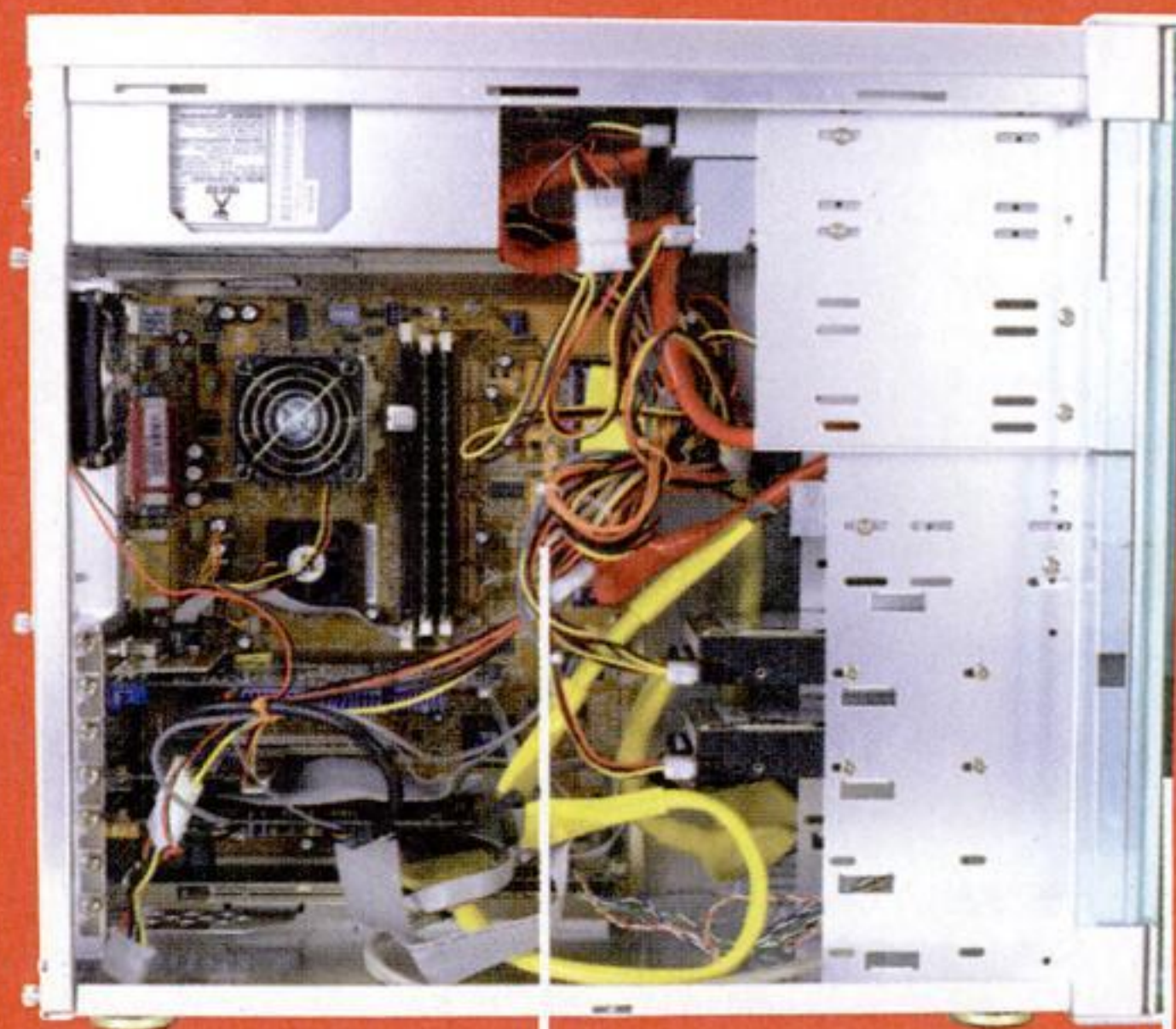
The PowerPlay includes all the right parts—they're just slow. An Athlon XP 1900+ and 256MB of PC2100 DDR memory are paired with an ASUS A7V266E mobo. The system even boasts an IDE RAID array using the motherboard's onboard Promise controller and a pair of 60GB IBM 60GXP's, but it still comes up short in the benchmark battle. Scores of 184 in *SYSmark2001* and 209 seconds in *Audiograbber* would have been great about six months ago, but now they're yesterday's news.

The wiring job in this system is the worst of the roundup. A bunch of color-coded and rounded cables do not a wiring scheme make. None of the cables are secured to anything, so power cables, rounded IDE cables, and the soundcard's internal ribbon cables all float freely around the case. Needless to say, this doesn't encourage good airflow.

So what's to recommend? Well, we were thrilled to find USB 2.0 ports, and we really dig the Audigy Platinum EX. We were also impressed at how quiet the PowerPlay ran, even in the traditionally loud aluminum Cooler Master case. Still, mediocre performance and a high price make the PowerPlay a sketchy choice.

MAXIMUM PC VERDICT: 6

\$2,995, 888.455.7978, www.computerhq.com



Bad housekeeping: Take a look at the case wiring in the PowerPlay—see anything you like? We didn't either.

Sneeze-guard: Whether it's your fancy or not, the clear acrylic window on the front of the PowerPlay's case is definitely a unique feature.

ABS Tiger

Athlon XP 2000+ for \$1,600? Holy Frijole!

Yes, we did a double-take when we saw the price too. Hell, we even did a triple-take. AMD's Athlon XP 2000+ running at 1.66GHz, Leadtek's WinFast GeForce3 Ti 500, 512MB RAM and a Plexwriter 24x—all for \$1,600. So what's the catch? If there is one, we couldn't find it. The Tiger wasn't the fastest rig in the roundup, but it's far and away the best bargain.

Our initial out-of-the-box inspection of the system wasn't particularly inspiring—the wiring was more or less tidy, but dangling IDE cables still inhibited airflow from the forward vent, and the Tiger was the only system that wasn't configured with a RAID array. But *SYSmark2001* didn't seem to mind. The Tiger returned the second-highest score in our roundup, which we suspect is a result of the massive 8MB cache on the 100GB Western Digital "Special Edition" WD1000BB. We should mention, however, that we tried to run *SYSmark2001* on the Tiger's original configuration no fewer than 15 times! It never completed successfully, so we were forced to do a clean install of Windows XP. Luckily for ABS, the final *SYSmark2001* result, combined with a second-place tie in our *Premiere* script, demonstrates that the Tiger excels at bread 'n butter office apps.

The rig's gaming benchmarks, on the other hand, were abysmal, coming in next to last in both *Quake III* and *3DMark2001*. But if getting the best frame rates in the universe isn't your number-one goal, and you like the idea of a heartwarming warranty of three years on parts and lifetime labor, you'd be hard-pressed to find a better deal on the best components.

MAXIMUM PC VERDICT: 8

\$1,600, 800.876.8088, www.abspc.com



Bad medicine: They took the care to neatly tie up some cables, but leaving them hanging out like a disembowelment does nothing to help airflow.

The power of one: We found that a single Western Digital "Special Edition" drive—with an 8MB cache—performed as good or better than the RAID arrays.

Velocity Micro Velocity AX1900+XP

This hot rod could use a tune-up

At first glance, the Velocity AX seems like a poster child for the mom 'n pop shops: familiar case, familiar components, familiar configuration, all put together with the kind of care and craftsmanship that the behemoth manufacturers can't offer. Unfortunately, the rig stumbled badly during a couple important benchmarks, leading us to think the configuration could have used a little more of the refinement bestowed on the case and interior.

The rig arrived in a handsome slate-gray case with a hinged door, and the WinXP activation code and product stickers were placed on the inside of the door—nice touch. The interior wiring was superb, with neatly bundled power supply cords and IDE cables folded out of the way behind the drive bays. There was also a dual-fan PCI card directly under the GeForce3 to cool the chip.

Despite an Athlon XP 1900+ (slightly overclocked to 1.612GHz), 512MB of PC2100 RAM, and a GeForce3 Ti 500 GPU bumped up to 270MHz, the Velocity AX hovered dangerously near the bottom of the pack in our *SYSmark2001* test and delivered just a modest 83.3fps in *Quake III*.

Luckily, the rig coughed up a more satisfying 30.2fps in our *3DMark2001* benchmark, and we're confident that with some tweakage, the Velocity AX could deliver a lot more than it did in all of the benchmarks. It's a decent performer in most respects, and comes at a fair price, but its poor *SYSmark2001* showing drags it down from a champion to an "also ran."

MAXIMUMPC VERDICT: 7

\$2,600, 800.303.7866, www.velocitymicro.com



Chill out: A PCI card fan beneath the overclocked GeForce3 Ti 500 keeps things cool during heavy frag sessions.

Jonesing: Velocity Micro's founder Randy Copeland was inspired to begin tweaking high-performance gaming systems after getting hooked on *Need for Speed: Hot Pursuit*.

ePCdirect Kommander XP

More power than we expected for the price

We're not sure what the "e" means in ePCdirect, but we suspect it stands for "economy." At about \$1,400, the Kommander XP is about \$1,000 less than all the other PCs in this showdown.

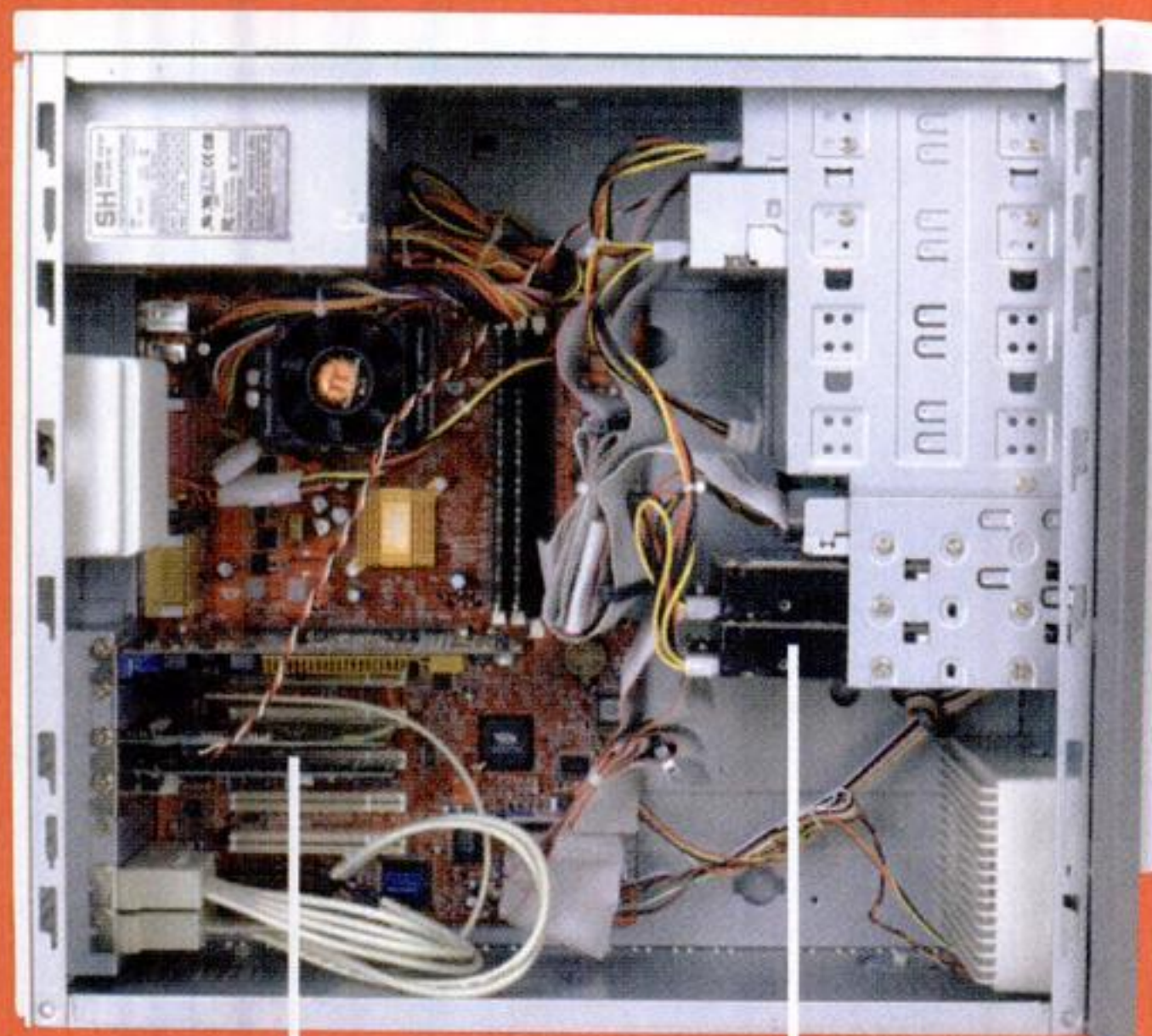
Unfortunately, the Kommander XP also trailed in performance. That's not surprising, considering the box includes an original GeForce3 card (instead of a GeForce3 Ti 500) and an Athlon XP clocked at "just" 1.53GHz. And, of course, even though it trailed the competition, the Kommander isn't that slow; it's just a Maserati in a Ferrari jungle. We also bet that a lot of people would gladly eschew a few faster core components in order to knock a cool grand off the price of admission. On the plus side, the rig does include USB 2.0 support, a rare amenity in this showdown. The USB 2.0 comes onboard the rig's MSI K7T Pro 2 RU motherboard, which is based on the much-favored VIA KT266A chipset. Unfortunately, our system didn't have the correct USB 2.0 drivers loaded, and Windows XP doesn't support USB 2.0 natively. D'oh!

We also grimaced when we saw the two smallish 40GB hard drives sandwiched against each other without any active cooling on them—that's just asking for a case of cooked platters. The final turn-off was the Acer 20x burner, which couldn't compete against the sexy Plexies installed in most of the other systems.

The Kommander 1800+ would be a Kick Ass PC if this were September 2001, but it's not, and the box reads like last year's specs. Still, the price is right for many budding enthusiasts and honestly the performance isn't all that bad.

MAXIMUMPC VERDICT: 6

\$1,390, 877.372.8833, www.epcdirect.com



Tons of USB: You get an additional six USB ports for a total of eight ports, but lose your bottom two PCI slots in the process.

Two close for comfort: We're not sure it's a good idea to sandwich two hot and sweaty hard drives together without active cooling.

SPEED KILLS

OPTIMIZED
FOR THE



Ballistics is compatible with all video cards.

"Maximizing the use of the **GeForce3™** card, GRIN has created a game that is furiously fast and sweet to your eyes." -NVIDIA.COM

The fastest game on earth is coming to your PC this fall. Ballistics is a heart-pounding, non-stop adrenaline ride through a futuristic world of Formula-One racers gone bad. Race against up to 8 opponents in **GeForce 3** enhanced levels that will blow you away. Achieve insane G-Forces traveling at twice the speed of sound. With full vertex shading and bump mapping, Ballistics brings some of the most impressive visuals seen on a PC to date. Get into the race, go **Ballistic**.

BALLISTICS

PUBLISHED BY:



DEVELOPED BY:



Ballistics © 2001 GRIN. Developed by GRIN. Licensed exclusively by Xicat Interactive, Ltd. Xicat and the Xicat logo are trademarks of Xicat Interactive, Ltd. NVIDIA, the NVIDIA logo, and GeForce 3 are registered trademarks or trademarks of NVIDIA Corporation in the United States and/or other countries. All other copyrights are property of their respective owners. All rights reserved.



Visit www.esrb.org
or call 1-800-771-3772
for more info.

Copyrighted material

SPECS / BENCHMARKS

	Company	CPU/RAM/Mobo	Videocard	Storage	Optical	LAN/USB/Firewire
NEXGEN		AthlonXP 1.6GHz, 512MB RAM, Asus A7V266E mobo	Leadtek GeForce3 Ti 500, 240/250MHz	Two IBM 60GB 60GXP (2MB cache) in a RAID 0 config	Pioneer 16x DVD-ROM, Plextor 24x/10x/40x CD-RW	3Com 10/100, four USB 2.0, two IEEE-1394
ELEMENT PC		AthlonXP 1.66GHz, 512MB RAM, MSI K7T266 Pro2 mobo	Leadtek GeForce3 Ti 500, 250/280MHz	Two Maxtor 80GB D740Xs (2MB cache) in a RAID 0 config	Pioneer 16x DVD-ROM, Plextor 24x/10x/40x CD-RW	Linksys 10/100, four USB 2.0, two USB 1.1
GMACHINES		AthlonXP 1.6GHz, 512MB RAM, Asus A7V266E mobo	Visiontek GeForce3 Ti 500, 260/267.5MHz	Two Seagate 60GB Barracudas (2MB cache) in a RAID 0 config	Toshiba 16x DVD-ROM, Plextor 24x/10x/40x CD-RW	D-Link 10/100, four USB 1.1, two IEEE-1394
XDREAM		Pentium 4 2.0GHz, 512MB RAM, Asus P4T mobo	Leadtek GeForce3 Ti 500, 240/250MHz	Two IBM 75GB 75GXP (2MB cache) in a RAID 0 config	Pioneer 16x DVD-ROM, Plextor 24x/10x/40x CD-RW	3Com 10/100, four USB 1.1, two IEEE-1394
OVERDRIVE		AthlonXP 1.53GHz, 512MB RAM, Abit KG7-RAID mobo	Visiontek GeForce3 Ti 500, 265/275.5MHz	Two IBM 60GB 60GXP (2MB cache) in a RAID 0 config	Pioneer 16x DVD-ROM, Plextor 24x/10x/40x CD-RW	Linksys 10/100, two USB 2.0, two USB 1.1, two IEEE-1394 (one front-mounted)
COMPUTER HQ		AthlonXP 1.6GHz, 512MB RAM, Asus A7V266E mobo	Hercules GeForce3 Ti 500, 240/250MHz	Two IBM 60GB 60GXP (2MB cache) in a RAID 0 config	Pioneer 16x DVD-ROM, TDK 24x/10x/40x CD-RW	3Com 10/100, four USB 2.0, four USB 1.1 (two front- mounted), two IEEE- 1394
ABS		AthlonXP 1.66GHz, 512MB RAM, Gigabyte GA-7DX mobo	Leadtek GeForce3 Ti 500, 240/250MHz	Western Digital 100GB WD1000BB (Special Edition with 8MB cache)	Pioneer 16x DVD-ROM, Plextor 24x/10x/40x CD-RW	3Com 10/100, two USB 1.1, one IEEE-1394
VELOCITY MICRO		AthlonXP 1.612GHz, 512MB RAM, Asus A7V266E mobo	PNY GeForce3 Ti 500, 250/280MHz	Two Western Digital D 100GBs (2MB cache) in a RAID 0 config	Asus 16x DVD-ROM, Plextor 24x/10x/40x CD-RW	Intel 10/100, six USB 1.1, two IEEE-1394
EPC DIRECT		AthlonXP 1.53GHz, 512MB RAM, MSI K7T266 Pro2 mobo	MSI GeForce3, 200/230MHz	Two Maxtor 40GB D740Xs (2MB cache) in a RAID 0 config	Lite-on 16x DVD-ROM, Acer 20x/10x/40x CD-RW	D-Link 10/100, four USB 2.0, eight USB 1.1

Soundcard	Software Highlights	Warranty/Support	Benchmarks*		Price	Verdict
Soundblaster Audigy Platinum eX	Windows XP Professional, Easy CD Creator 5, Power DVD	One year parts/labor; 9am-6pm, Mon-Fri	SYSMark	183	\$2,840 (\$3,500 w/ 21-inch KDS VS-21e monitor and Creative DTT2500 speakers)	5
			Premiere 6	176		
			Audiograbber	181		
			MusicMatch	218		
			Quake III	84.6		
			3DMark	30.9		
Hercules Game Theatre XP	Windows XP Professional, Easy CD Creator 5, Power DVD	One year parts/labor; 9am-9pm, Mon-Fri; 10am-6pm, Sat; plus 24/7 "Ask Dr. Tech" Home Plan	SYSMark	193	\$2,600 (\$3,470 with 19-inch Sony G20s monitor and Klipsch 5.1 speakers)	9 KICK-ASS
			Premiere 6	163		
			Audiograbber	181		
			MusicMatch	207		
			Quake III	92.2		
			3DMark	33		
Soundblaster Audigy Platinum eX	Windows XP Home, Power DVD	One year parts/labor; 8am-6pm, Mon-Fri	SYSMark	190	\$2,568 (\$3,558 w/ 22" NEC FE-1250+ monitor and Logitech Z-560 speakers)	9
			Premiere 6	174		
			Audiograbber	184		
			MusicMatch	219		
			Quake III	88.8		
			3DMark	27.4		
Soundblaster Audigy Platinum eX	Windows XP Home, Easy CD Creator 5.0	One year parts/labor; 9am-6pm, Mon-Fri	SYSMark	189	\$2,570 (\$3,560 w/ 22-inch NEC monitor and Klipsch 5.1 speakers)	8
			Premiere 6	208		
			Audiograbber	184		
			MusicMatch	218		
			Quake III	86.7		
			3DMark	28.2		
Soundblaster Audigy Platinum	Windows XP Professional, WinDVD, Easy CD Creator Basic 5.0	One year parts/labor; 24/7	SYSMark	187	\$2,595 (\$4,115 w/ 22-inch Viewsonic P225F monitor and Klipsch 5.1 speakers)	6
			Premiere 6	179		
			Audiograbber	**		
			MusicMatch	223		
			Quake III	83.8		
			3DMark	30		
Soundblaster Audigy Platinum eX	Windows XP Professional, Nero 5.5, Power DVD	Three years parts/labor; 9am-5pm, Mon-Fri	SYSMark	184	\$2,995 (\$3,895 w/ 21-inch Sony G520 monitor and Creative Inspire 5300 speakers)	6
			Premiere 6	172		
			Audiograbber	209		
			MusicMatch	214		
			Quake III	86.2		
			3DMark	26.5		
Soundblaster Audigy X-Gamer	Windows XP Home, WordPerfect Office 2002, Easy CD Creator 5.0	Three years parts/lifetime labor; 8:30am-5:30pm, Mon-Fri	SYSMark	191	\$1,600 (\$2,100 w/ Hitachi CM715 monitor and Klipsch 5.1 speakers)	8
			Premiere 6	172		
			Audiograbber	187		
			MusicMatch	216		
			Quake III	79.4		
			3DMark	26.5		
Soundblaster Audigy Platinum	Windows XP Professional, Easy CD Creator 5, Asus DVD Player, Norton Antivirus 2002	Three years parts/labor; 9am-5pm, Mon-Fri	SYSMark	179	\$2,600 (\$3,790 w/ 21" Sony G520 monitor and Klipsch 5.1 speakers)	7
			Premiere 6	183		
			Audiograbber	184		
			MusicMatch	223		
			Quake III	83.3		
			3DMark	30.2		
Hercules Game Theatre XP	Windows XP Home, Primo CD Plus, Power DVD	Two years parts/labor; 24/7	SYSMark	178	\$1,390 (\$1,590 with Orion 19-inch monitor and Logitech Z340 speakers)	6
			Premiere 6	182		
			Audiograbber	329		
			MusicMatch	227		
			Quake III	76.8		
			3DMark	22.2		

Ask the Doctor

Symptom → Diagnosis → Cure

Have a burning PC problem? How about a burning PC sensation? We're more than happy to help you with your PC problems, but you might want to get that sensation thing checked out by a qualified sensation checker-outer. If you have PC questions, send them to doctor@maximumpc.com. Just remember: We can't answer every e-mail. Oh, *no*—not by a long shot.

ACR Ain't All That

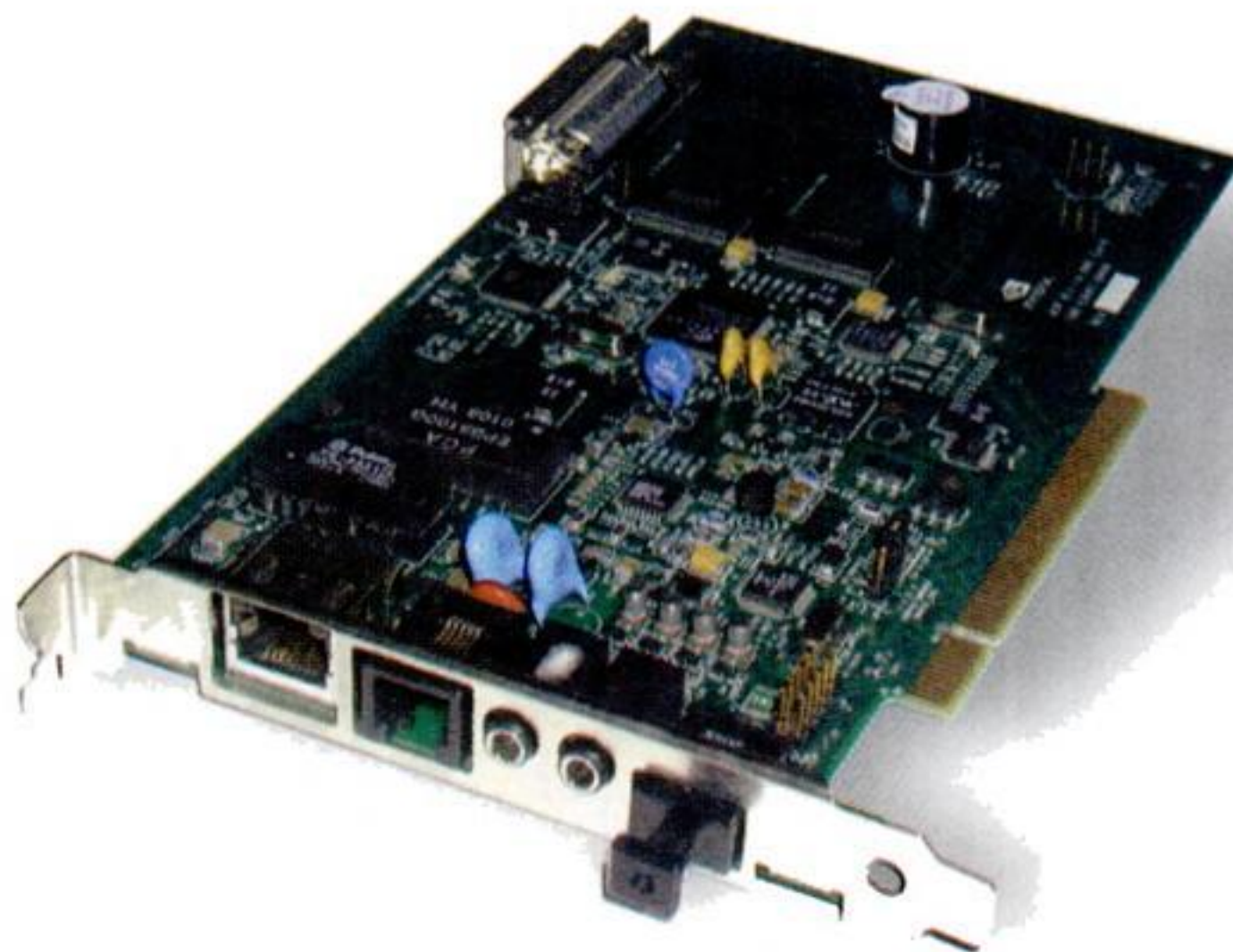
I ran into a hardware problem that lead me to purchase a new mobo. I chose a dual-proc board with RAID so I could double my existing CPU and hard drive power. The new board has five PCI slots and one ACR slot. Funny thing is, there are no ACR cards that can plug into this slot. In fact, everyone I asked about it said either they never heard about it or that I must be thinking of an AMR slot. One guy even tried to convince me I was mispronouncing AGP slot! Daa! I've heard

"Even if you do find that the machine uses both processors, the Doctor doesn't recommend that you go for the slower-clocked Pentium III Xeons."

there are supposed to be wonderful boards available that use the ACR slot. Boards that combine audio, Ethernet, and USB all in one. Is there really such a thing as this mystery ACR beast? Please advise.

—JIM DEPASQUALE

An ACR card is a little riser card that features modem, audio, networking, and USB interfaces. Hook an ACR card into your mobo and you suddenly gain access to all the integrated poop that's been soldered onto your board. ACR is simply the non-Intel version of CNR. Unfortunately, Jim, going out and buying an ACR or CNR to augment your motherboard isn't a likelihood yet. Because different motherboard makers can hook whatever feature they want into the ACR or CNR slot, it's not guaranteed that an ACR card specifically for, say, Ethernet, will work in the board you have. For this reason, it's difficult to obtain an ACR/CNR card that isn't bundled with the motherboard. Currently, ACR and CNR are really designed for



The only place to get an ACR board, or audio and communications riser, is from your mobo manufacturer; otherwise you risk compatibility problems.

full-system vendors who want to add networking, audio, or modem capabilities to a PC. If it didn't come with your motherboard, it's probably not worth seeking out.

Broadband Overload

I'm lucky enough to have both a cable modem and DSL in my home, and I want to find a way to combine them to increase my upload/download speeds. Do you have any suggestions?

—GERRY ROBINSON

The Doctor doesn't know of any piece of software that will let you do that. Theoretically, a download manager such as *LimeWire* or *GoZilla!* that pulls from more than one source to speed your download might work, but we couldn't test it here because we don't have two appropriate connections set up in our Lab. Unfortunately, Windows' integrated connection aggregation software works for only PPP connections, and won't work for an Ethernet or PPPoE connection. We did find router software called *MidPoint* (www.midcore.com) that claims to allow aggregation of multiple connections, but haven't tested this functionality for the same reason mentioned above. If you try it out, let us know how it works.

Wireless Mice, Keyboards, Games, and You

I was wondering, How big of a performance hit would occur during gameplay when using a wireless mouse from a company such as Logitech? In my current situation, a wireless setup would be very convenient, but I have been hesitant about buying one because I'm not

sure how it will affect gameplay.

—DEREK BECKMAN

The Doctor loves the convenience of a wireless keyboard and mouse setup, but being a discerning gamer, he demands great things from his mouse. He frankly prefers a higher refresh rate from his mouse than a wireless device can provide. For example, standard PS/2 mice update their position to the PC 40 times per second. USB mice update 125 times per second, resulting in more precise movement. By contrast, a wireless mouse updates 50 times a second, which can result in jerky, choppy mouse movements.

What's the upshot? If you're serious about games, forgo a wireless mouse in favor of a wired rodent.

Outlook Attachments Make ME ANGRY!

I know that Microsoft is trying to do its part in protecting computer users from viruses, but it seems to be at the cost of our e-mailing freedom. I have *Office XP*, and it seems as though *Outlook* is calling the shots now on what can and cannot be received. Any type of .bat, .exe, .vbs, or .js attachment is blocked, and although it's evident an attachment was sent, Microsoft gets the last laugh by informing you that you will not be able to access it. More than 50 percent of the computer-using public might be idiots and inclined to open every attachment they get over e-mail, but the rest of us are a bit more discriminating. Furthermore, viruses can come in many shapes and sizes and could just as easily exist in a *Word* doc-

ument. I want my freedom back.

—MICHAEL HAGERMAN

Blocking executable attachments wholesale is a pretty heavy-handed response to the proliferation of worms, Trojans, and viruses, but it's better than some of the other solutions we hear Microsoft considered, like shutting down the whole Internet thing all together ("...if you can't use it nicely..."). And as far as we know, there isn't any easy way to lift the embargo in *Outlook 2002*. But there are a few work-arounds.

You could ask your correspondent to change the extension of the file he or she sends you and inform you of the correct extension in the text of the e-mail. Not fun. A more efficient approach would be to compress the file and send it as a .zip archive instead.

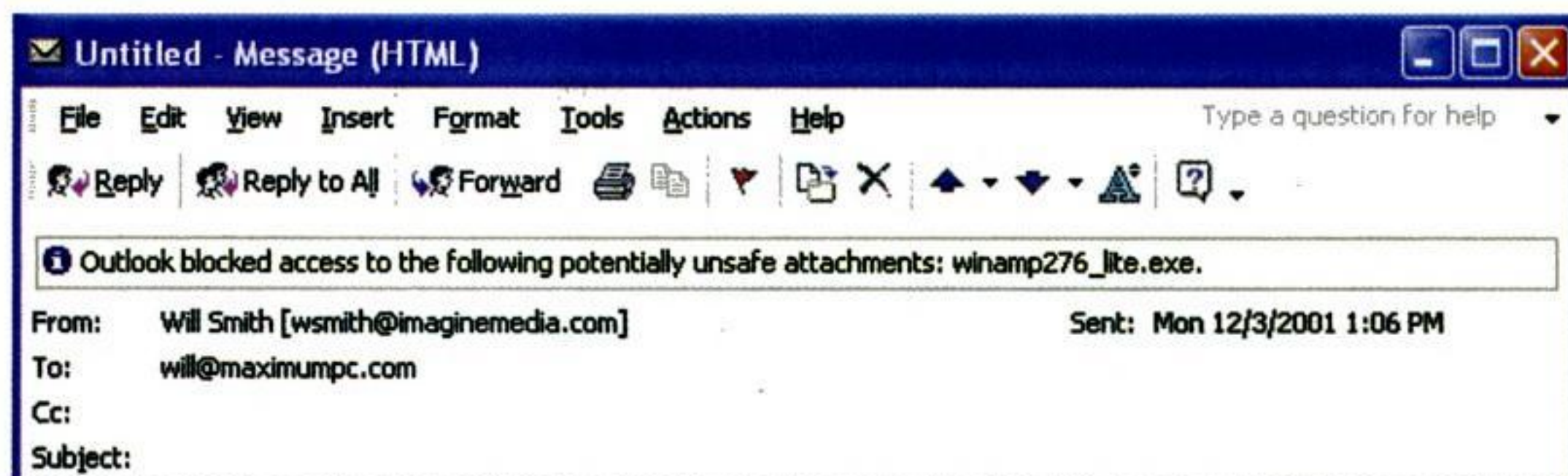
But if you want to really throw open the gates (no pun intended), go to <http://support.microsoft.com> and look up the Knowledge Base article #Q290497. You'll find not only a list of over 40 verboten attachments, but also a 12-step (!) method for removing the ban on certain attachments by editing the Registry.

And remember, you always have the "freedom" to choose a different e-mail client!

User Serviceable? Yes/No

Can I upgrade my laptop? If so, what components can I switch safely?

—NORAH TEPPER



After the deluge of self-replicating macro viruses that began last February, Microsoft stopped users of *Outlook* and *Outlook Express* from opening attachments with certain extensions.

The easiest components to upgrade are the memory and hard drive. With a desktop replacement notebook, you can usually upgrade by adding peripherals to the miniPCI slot, as well. Keep in mind that it will depend on what your manufacturer supported in its miniPCI implementation. If, for instance, the notebook maker didn't wire the notebook to support a miniPCI 802.11b card, then the card won't work.

In general, it's actually very difficult to perform major alterations on notebooks, and the difficulty usually increases as the notebook gets smaller. Larger notebooks, again, have some modularity, and the Doctor has witnessed minor overclocking jobs and surgery to swap even video subsystems in some of the more substantial models. However, even if you had the skills to do this to your notebook, you probably couldn't procure the necessary parts. As a general rule, stick to the obvious upgrades (hard drive and memory) for your notebook.

Chipset Conundrum

I'm considering upgrading my year-old AMD 1GHz and ASUS A7V MB, and, after reading the last issue of *Maximum PC* ["Gear of the Year," December 2001], I'm considering an upgrade to an Athlon XP. There are a number of motherboard options, but I'm not sure I'm experienced enough to make an informed decision, so I'd like to hear your opinion. I've heard enough about ASUS to respect its reputation and would rather stay with the security of their brand recognition.

My problem arises because ASUS seems to offer two motherboards for the Athlon XP: the ASUS A7V266 with a VIA KT-266 chipset and the ASUS A7M266 with an AMD 760 chipset. The A7V266 seems to have more features and contains a VIA chipset, which I recognize as a reputable industry name, but the A7M266 has an

THE WINDOWS XP SECTION

Since the October 25 launch of Windows XP, the Doctor has received dozens of questions about Microsoft's new OS. Here are a couple of the best ones we received this month.

Install Dilemma

My problem is that when I try to upgrade Win98SE, everything goes well until the first time the system reboots, before it begins the actual install process. It always stops at the black screen and says "Windows is checking your system hardware configuration." I thought I was being impatient, so I left it there overnight and the message was still there in the morning. So I rebooted and started 98 and tried the install of XP again, and it locked-up in the same place. Please help me!

—MIKE VAUGHN

The bad news is you've got a problem. Windows XP either doesn't like a piece of hardware or it doesn't like your Win98 install. The best thing you can do is to back up your system, then try a clean install of WinXP. The best way to do this is to boot off the WinXP CD, instead of trying to run the installer from within Windows.

If you do have to do a clean install, give the Migration Wizard a try. It will grab all the files and even some apps and copy them to the new Windows XP install. It helps to have a spare hard drive around, but if you don't, you can copy your data to another partition. The Migration Wizard can be found in the Windows XP install menu, under "Perform Additional Tasks" then "Transfer Files and Settings."

MSN Messenger Be Gone!

I upgraded to Windows XP Home and now I see all kinds of promo's, ads, etc., for Microsoft products. This is bad

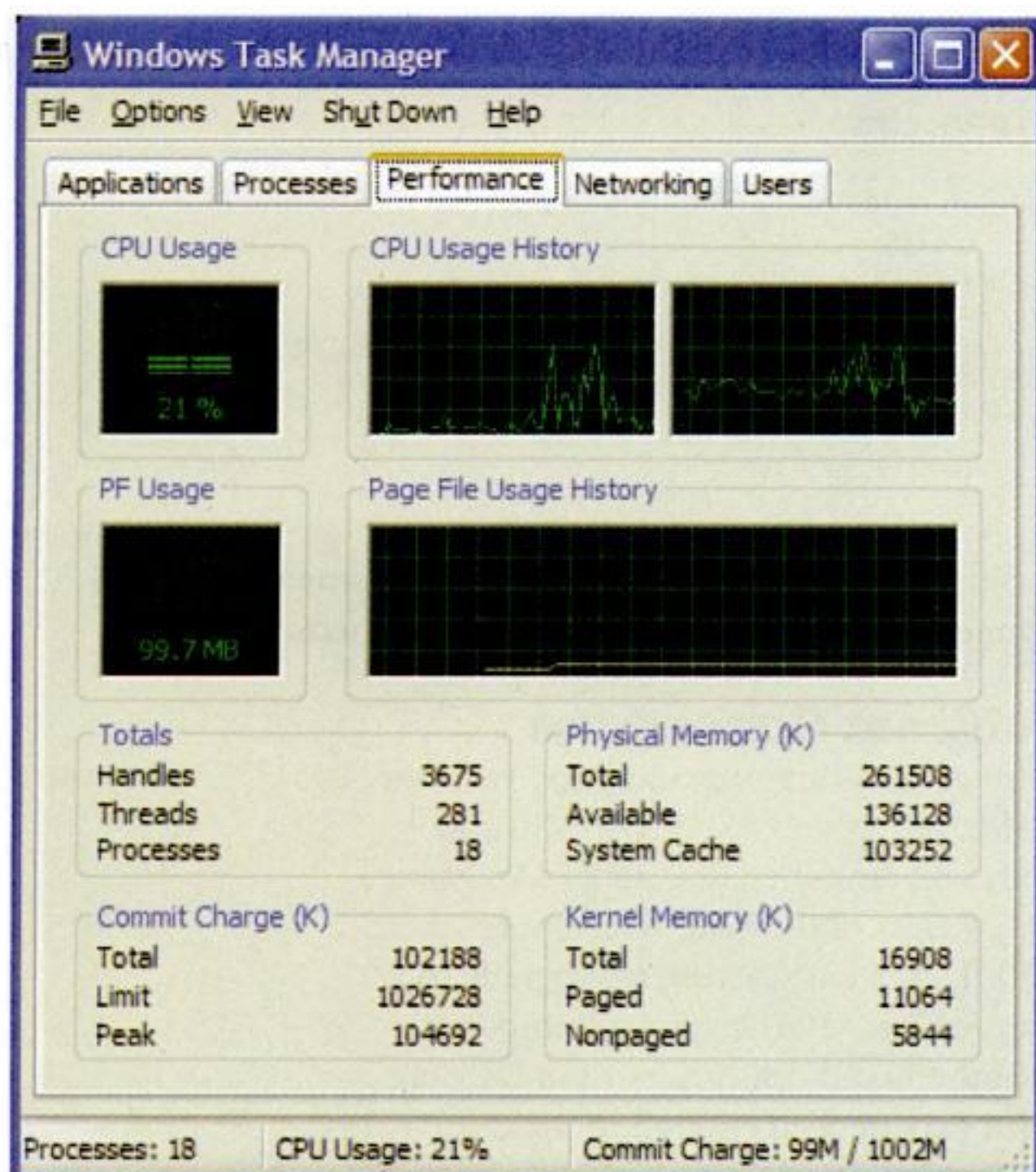
enough, but I also find that *Microsoft Messenger* always loads when I run *Outlook Express*. I neither need nor desire this program.

Can you recommend a way to get rid of this, and all other MS-BS? I'm trying to save memory space.

—GARY BONHARD

Preventing *Messenger* from loading with *Outlook Express* is as easy as pie. You don't need to do any kooky Registry editing or anything like that. All you need to do is start *Outlook Express*, go to Tools > Options and uncheck "Automatically log onto Windows Messenger." It's as easy as that.

We're not exactly sure what you're talking about when you say, "promo's ads, etc., for Microsoft products," since we've never really noticed any.



Track the usage of both CPUs in your two-proc system by using the Task Manager in Windows 2000 and XP.

AMD chipset, which I believe would be more reliable.

As if that's not enough, the ASUS web site mentions an upcoming motherboard called the A7V266-E containing a new chipset (VIA KT-266A), which will support the Athlon XP. What are the pros and cons of the two chipsets and/or should I just wait for the A7V266-E?

—JAMES HAWKINS

After reading "Speed Trials" in the January issue of *Maximum PC*, the Doctor suggests you check out the ASUS A7V266-E. The KT-266A chipset is the Athlon XP chipset to beat today. Although nVidia's nForce is faster in some respects, the chipset is definitely experiencing some teething pains, such as some memory bandwidth issues with double-sided DIMMs. AMD's 760, once king, is now second choice for most AMD fans.

Pencil + CPU = Slow Painful Death

About a month ago, I took a lead pencil to the L1 bridges on my AMD Thunderbird 200FSB 900MHz chip. It was all fun and games until I tried to boot. What I got was either a series of four consecutive tones or a single long beep. I couldn't tell.

At the time, I thought I had fried my chip, so I bought another one (an AMD T-bird 266FSB 1.2GHz). Same problem.

By digging around online, I found a trick that lets me boot the PC. Hitting the "insert" key while starting up my

system makes everything work fine. I'm able to get into both my Win98SE and my Win2000 OSes. But I have to do this every time, which is a major pain.

Of course, I set the chip speed and went through all the BIOS settings... and even tried setting them to the "failsafe defaults." Still, no luck. The only way I can boot into a functional OS is by hitting the insert key.

—JOHN MCEWEN

Generally, if your motherboard can boot with the insert-key routine, then it should respond to resetting the CMOS by using the jumpers. When resetting the CMOS, you may have neglected to unplug your system. If you try to reset the CMOS by jumping the board with the power cable still plugged in, it won't actually reset. Disconnect the cable leading to the PC's power supply, wait five seconds, then jumper the CMOS reset jumpers. Of course, make sure you are actually jumping the correct jumpers (double-check your motherboard manual if necessary).

Make sure you set the correct speeds in the BIOS for your new 1.2GHz/266FSB (it should be set to 9x133), then fire away. Abit's own FAQ (www.abit-usa.com) has a recommendation for people who have "penciled the L1 bridge on the CPU surface. Unseat the CPU and clean the surface by a rubber carefully. Clear CMOS via jumper than power on the system." You get the gist.

Four P-IIIs or Two Athlon MPs?

I'm a videographer and I use a computer for my video editing. I currently have a dual 550MHz P-III rig with 512MB of RAM. This system takes up to 10 hours to render a 2 minute, 30 second 3D animation.

I saw a system on Ebay with four P-III 550MHz Xeon processors and 2GB of RAM for \$2,500, or I could buy a dual Athlon XP 1900+ with 1GB of RAM for about the same price.

Which one of these would be better in Adobe *Premiere* renders? I'd also like to know if the Intel 450NX chipset in the Xeon system supports AGP videocards. I really don't want old technology, but my dream system has quad processors.

—PHAT NGUYEN

Adobe *Premiere 6.0* does take advantage of multiprocessor support but only under certain circumstances. You should fire up *Premiere* (ideally version 6.0), open your project, then Ctrl-Alt-Del to pull up the Task Manager to monitor the impact

on both processors under Windows 2000. As you render your project, watch the CPU graphs to see how much each CPU is used. If you find that both CPUs rarely hit 100 percent, then getting a single, faster CPU will benefit you more than two or four slower CPUs.

Even if you do find that the machine uses both processors, the Doctor doesn't recommend that you go for the slower-clocked Pentium III Xeons. As its name implies, the 450NX PCIs set does not support AGP. The chipset also does not support higher frontside bus speeds, DDR memory, 64-bit PCI, or any of the advanced features we've seen on mobos in the past two years. Furthermore, Intel no longer sells the 450NX, so you'll probably never be able to upgrade the CPUs. The Doctor recommends that you invest in a pair of high-speed Athlon MP CPUs and a 760MP motherboard such as the Tyan Thunder K7. You'll have access to higher-clocked CPUs when they come out, and driver support for new OSes, such as Windows XP Pro, is already available.

Do MP Mobos Support XP Processors?

I went to Tyan's web site to look at its new dual processor mobo. It says that it supports the Athlon MP processor, but will it support the new Athlon XP processors? I would rather use the Athlon XP than the MP.

—MATT HALLMAN

If you're hoping to drop a pair of Athlon XP CPUs into a dual rig, the short answer is that it may or may not work. AMD's Athlon XP and Athlon MP CPUs are virtually identical (the newer MPs even use the same organic packaging instead of the ceramic packaging of the 1.2GHz and 1GHz MPs). The main difference between the CPUs is in the testing AMD does. Athlon MPs are thoroughly tested and guaranteed to work in multiprocessor configurations. Athlon XPs, on the other hand, are not tested for multiproc purposes.

For most people, however, the lack of dual-proc (DP) certification will not be a deterrent, and the dual XPs will probably work just fine—there's simply no intrinsic reason why XP procs wouldn't work in tandem. In fact, if you're ultra cheap, dual Durons should work well too. Something you should keep in mind anytime you're dealing with a non-DP-certified CPU is that the multiproc configuration may work fine for some things but not for everything. If you're building a rig for home use and don't mind occasional weirdness, go for it. If you're building a server to run your business on, risking stability to save \$100 is just stupid. ■

When it comes to **securing your data**, we've got you **covered**.

Drive Image®—When it comes to safeguarding your valuable data, don't take chances. Drive Image 5.0 automatically makes regular backup copies of your system and files. If your hard drive crashes, your information is immediately restored with a click of a button.

Drive Image is the easy answer for protecting data on your hard drive, providing disaster recovery and for system upgrades. Make an exact copy of your entire hard drive or partition in minutes onto a Zip®, Jaz®, CD-R/W, network drive, or another partition. Then simply restore as needed. Other features include:

- *QuickImage™ Windows® interface lets you schedule regular, automatic backups of your entire hard drive or individual partitions*
- *PowerQuest DataKeeper™ for constant monitoring and automatic file backup to an external drive or separate partition*
- *SmartSector® technology to reduce the time it takes to create and restore data, thus decreasing boot time and increasing performance*
- *Improved performance and support for a greater number of CD-R/W drives, including IDE, SCSI and PCMCIA drives*
- *ImageExplorer to browse for and restore files or folders*

The next time disaster strikes, be prepared. Visit your local software retailer, logon to www.powerquest.com/di5mp or call 1-888-497-9998 and order Drive Image today!



Protect your data with Drive Image 5.0
Drive Image lets you reliably create and store an exact copy of your entire hard drive or individual partitions until you need it.

How To... ■ ■ ■ A step-by-step guide to tweaking your PC Experience

HACK YOUR

Turning your 30GB video recorder into a 138GB monster is simple—but you'll need a PC to do it!

TIVO



BY WILL SMITH

You already own a TiVo personal video recorder—a next-gen recording device that eschews traditional analog tape and actually records TV shows to a hard drive in the MPEG-2 format. The only problem is that your TiVo just doesn't hold enough TV. Well, here's the how-to you've been waiting for. We're going to show you how to open your TiVo and add a new hard drive to complement the one that's already inside. **WARNING: This operation, however safe and effective, will void your warranty!** Regardless, we still think having a TiVo with more than 100 hours of recording time is more

than worth a little warranty violation.

Before you start working on this, read all of the instructions to their completion. If you don't follow the instructions precisely, you might seriously damage your TiVo. We'll assume you have a basic knowledge of upgrading PCs before you begin—*Maximum PC* will **NOT** provide any follow-up tech support for this how-to and is not responsible if something goes wrong with your TiVo upgrade. However, we invite you to check out www.tivofaq.com/hack for instruction in even greater detail.

Gather Your Parts

Before you get started, you'll need a few supplies. Here's the short, short list.



A. A TiVo unit with a single drive. The low-end 14-, 20-, and 30-hour units all use single drives. Go here for a definitive list: www.9thtee.com/tivoupgrades.htm.

B. The biggest hard drive you can get your hands on, preferably 5400rpm (because slower spinning drives consume less power and generate less heat). We used a Maxtor 80GB 540DX.

C. The Kazymyr Boot CD, created from an ISO image available at www.9thtee.com/tbdv2_6i.iso. You can use *Easy CD Creator*, *Nero*, or most any other CD burning app to burn the ISO to a CD.

D. TiVo hard drive mounting bracket, available for around \$15 from <http://9thtee.com>.

E. T-10 Torx screwdriver (to open case and add/remove HDs).

F. Regular screwdriver (to pry open stubborn TiVo case).





1 Bust Open the Case

In order to get into your TiVo, you'll need to unscrew the three screws circled in red above. Use your T-10 Torx bit to loosen these screws. Then you'll need to gently slide the top of the case off the back of the unit. You might need to use a flat screwdriver or a butter knife to gently pry along the back edges of the case to get the top moving. The red circles show the best places to pry.

If you get to this point and there are already two hard drives in your TiVo, you'll need to check the TiVo hacking FAQ (www.tivofaq.com/hack) for instructions on how to replace your second drive.

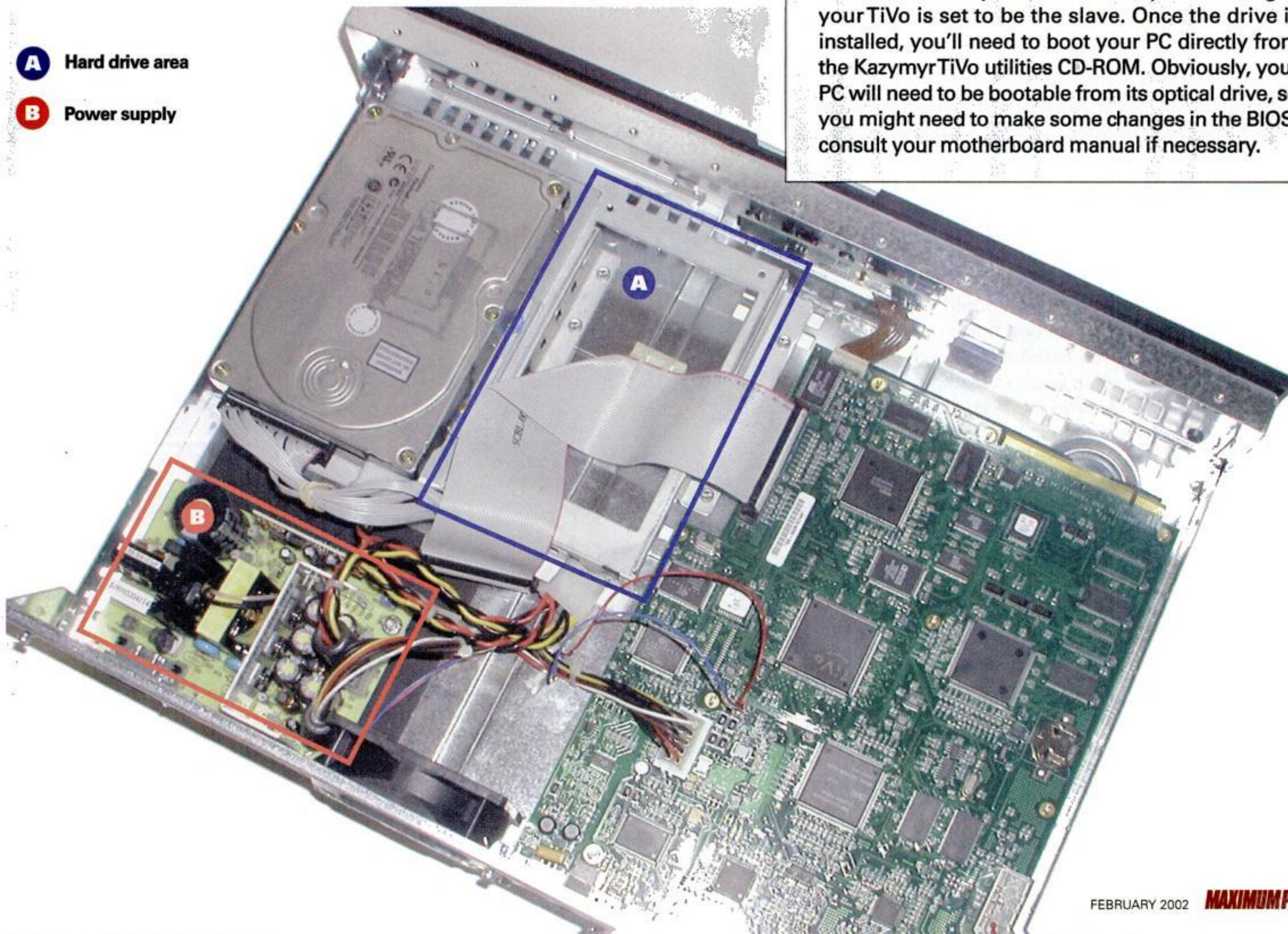
2 Look Around the Innards

Welcome to the guts of your TiVo. Before you get started, take a look around. The main things you need to be concerned with are the power supply (outlined in red) and the hard drive bays (outlined in blue).

WARNING: Stay away from the power supply since it's unshielded and can shock the hell out of you even when the TiVo is powered down!

A Hard drive area

B Power supply



3 Let Your PC Do the Talking

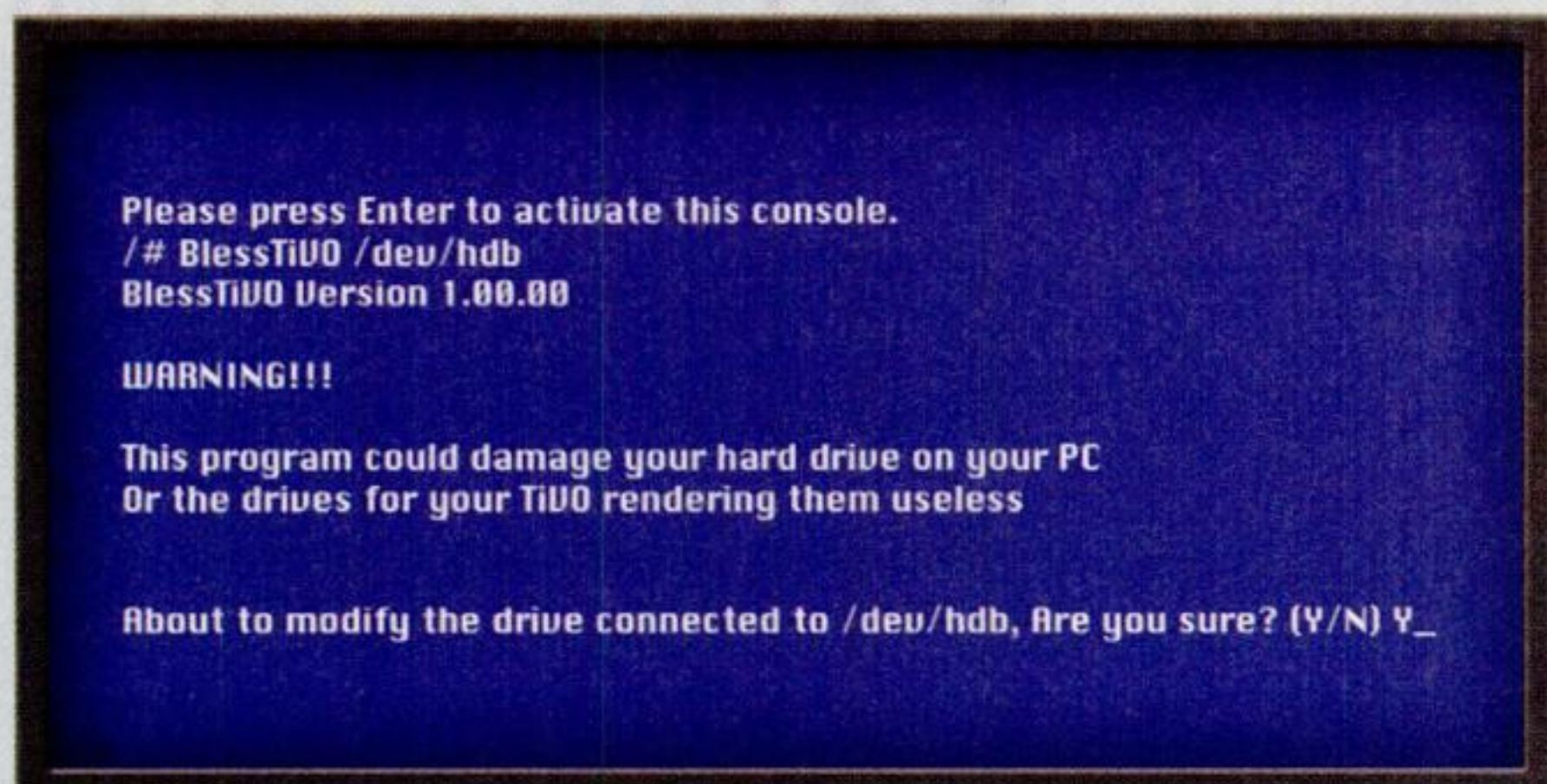
In order for your TiVo to recognize its new hard drive, you'll need to set up the new hard drive so that it can properly communicate with the machine's original hard drive once both are installed in the same box together. To do this, connect the drive you want to add to your TiVo to the primary IDE channel of your PC as the slave. You probably won't need to disconnect your PC's current hard drive to do this, but you may need to temporarily unhook your CD-RW or Zip drive. And you'll definitely need some type of operational optical drive remaining in your PC.

Make absolutely certain the drive you're adding to your TiVo is set to be the slave. Once the drive is installed, you'll need to boot your PC directly from the Kazymyr TiVo utilities CD-ROM. Obviously, your PC will need to be bootable from its optical drive, so you might need to make some changes in the BIOS; consult your motherboard manual if necessary.

4 Bless Your PC

No, this step doesn't involve the Pope. After you boot off the CD, you'll see a screen with a lot of text containing lots of information about DMA modes and byte swapping. If you don't know what to do here, or you just don't understand what's going on, it's safe to simply press Enter and continue booting.

After your hardware is initialized, you'll be presented with a Linux login prompt. To log in, type `root` and press enter. There is no password. Now it's time to run *BlessTiVo*, the application that will prime the add-in hard drive for your TiVo. If you connected the hard drive to your Primary IDE channel as the slave, then you'll type `BlessTiVo /dev/hdb` and press Y when prompted. The *BlessTiVo* app will then prep your drive for the TiVo. This should take just a couple seconds. **WARNING:** Make absolutely certain your drive is, in fact, connected to the Primary Slave channel, or this command will wipe the drive on the Primary Slave channel.



NOTE: This is a re-creation of an actual screen.

6 Get More Info

You can check the results of your upgrade by firing up the TiVo and going to the "Read new messages and setup" menu (which may not be called exactly that, depending on your software version), then choosing System Information. The total capacity of your drive should be shown somewhere in that screen (again, it varies depending on what version of the software your TiVo is running). After we upgraded our 30-hour TiVo with an 80GB hard drive, we had 138 hours of recording capacity at Basic Quality!

If you want to learn more about hacking your TiVo, you're not alone. There's a huge community of users who are performing more and more advanced hacks every day. The TiVo is easier to hack than other set-top boxes because it's based on PowerPC Linux. If you're interested in adding a network card to your TiVo so it can get updates from the net, or if you simply want to replace the original hard drive that came with your TiVo, check out the TiVo hacking FAQ at www.tivofaq.com/hack.

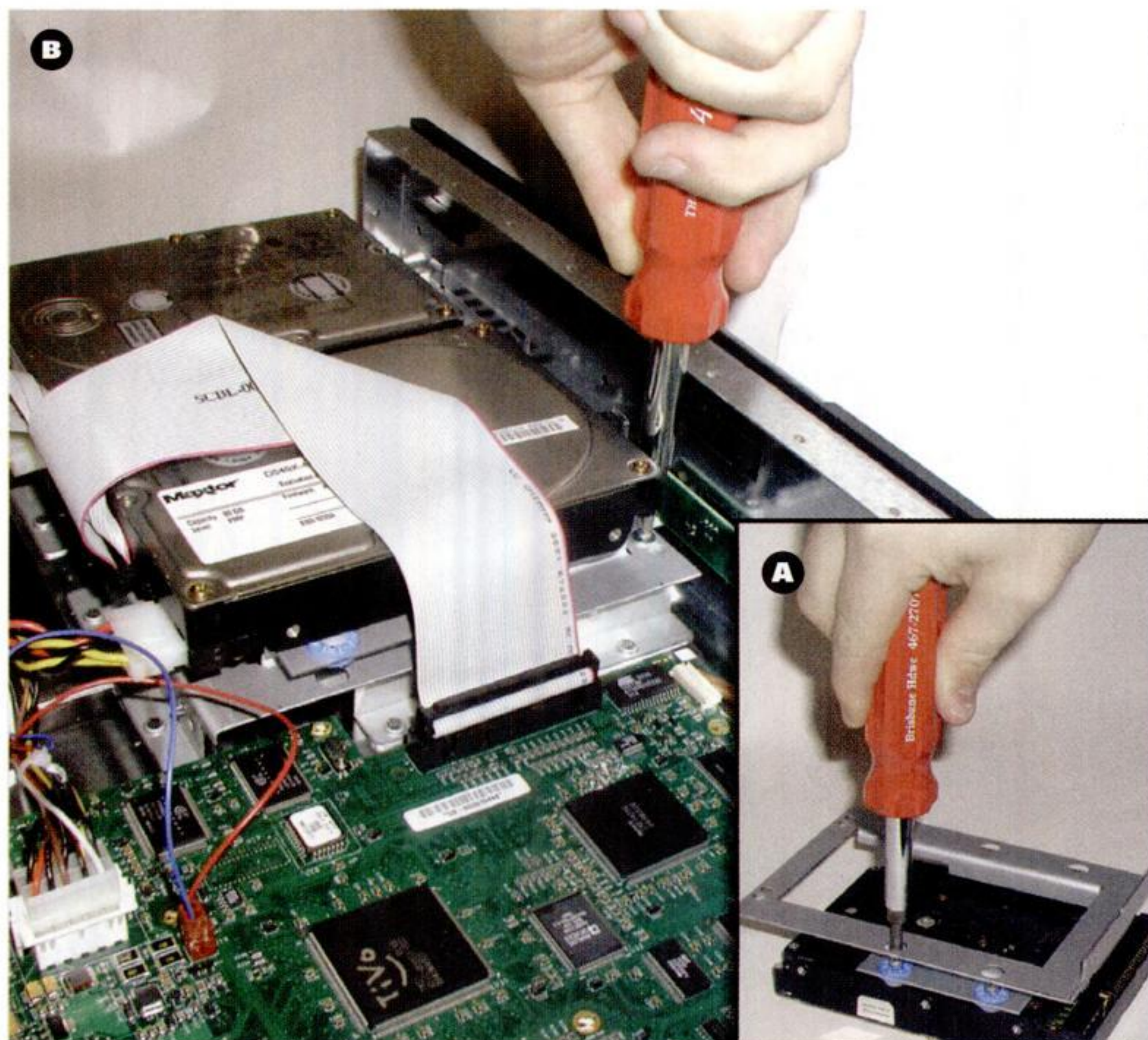
Another awesome TiVo hacking resource—and the source of most of the info in the TiVo hacking FAQ—is the forum at www.tivocommunity.com. The TiVo Underground forum should be of interest to anyone who's opened up his box. The folks there should be more than happy to help someone who's having trouble with an upgrade. ■

5 Get Up and Running

Now that your add-in hard drive is blessed, it's time to install it beside your TiVo's original drive. First, you'll want to mount the add-in drive to the mounting bracket from www.9thtree.com (Image A). Use the four screws and blue washers as shown in the picture. Make sure you attach the drive facing the right way. The IDE and power connector should be on the same side as the lip that holds the bracket in place. After you've properly placed the drive on the bracket, you can fasten it to the TiVo chassis (Image B). Make sure you've got the new drive's jumper set for the slave position!

Once both drives are mounted, connect the IDE cables to them. The original drive should be connected to the end of your IDE ribbon cable; the new drive should be connected to the middle interface. Attach power headers to each drive, put the lid back on, and your new TiVo should be ready to go!

Once you connect the new drive, and power up the TiVo, the two drives will become "married." This means they can't be separated without the aid of some type of software, if at all. If you separate married drives in a TiVo, the TiVo unit will stop working entirely, so don't try this unless you're sure you have a plan of action. You have been warned.





TRU XP home

The Ultimate system for your home.

\$599

- AMD Athlon XP Processor 1600+ with QuantiSpeed architecture** outperforms competitive 1.6 GHz processors.
- 256MB Shared SDRAM
- Savage4 3D AGP graphics
- 20GB 7200RPM Hard Drive
- Creative Labs 52X CD Rom
- Windows XP Home Edition
- 56K Fax/Voice Modem*
- Stereo speakers
- 2 Front USB Ports
- Internet Keyboard
- Scroll mouse
- 1 Year Toll Free Tech Support
- Just Add Monitor



**wait less
XPerience more**



Introducing the new TRU™ XP system by Thompson's Computer Warehouse, featuring the AMD Athlon™ XP processor with QuantiSpeed™ architecture which boosts overall productivity and enables the ultimate computing experience. Well suited for business, home office, gaming, and personal use, this flexible platform has the features needed for today's demanding applications and leaves room for future expansion. By choosing the durable TRU™ XP Home system for your home office, the TRU™ XP Pro for the Business Professional, or the powerful TRU™ XP Gamer for the hardcore gamer, you're getting a processor designed to run flawlessly on the world's most popular software and a system that delivers next generation features that will give you the power to perform.

TRU XP Pro

The Ultimate system for the professional

- AMD Athlon XP Processor 1700+ with QuantiSpeed architecture*** outperforms competitive 1.7 GHz processors.
- Savage4 3D AGP graphics
- 256MB Shared SDRAM
- 30GB 7200RPM Hard Drive
- 16X DVD Player
- Microsoft Windows XP Pro Edition
- 56K Fax/Voice Modem*
- 10/100 Fast Network Card
- Stereo speakers
- 2 Front USB Ports
- Microsoft Office Keyboard
- Microsoft Optical Intellimouse
- 1 Year Toll Free Tech Support

\$799

**Add a 17" Monitor for only \$149

TRU XP Gamer

The Ultimate system for the gamer

- AMD Athlon XP Processor 1800+ with QuantiSpeed architecture**** outperforms competitive 1.8 GHz processors.
- 512MB DDR Memory
- 40GB 7200RPM Hard Drive
- 16X DVD Player
- 10/100 Fast Network Card
- Microsoft Windows XP Pro Edition
- 56K Fax/Voice Modem*
- Stereo speakers
- 2 Front USB Ports
- Creative Audigy Sound Card
- GeForce 2 Titanium 64mb AGP Video
- Microsoft Office Keyboard
- Microsoft Optical Intellimouse
- 1 Year Toll Free Tech Support

\$1199

**Add a 17" Monitor for only \$149

TRU XP Barebone

The Ultimate system for the techie

- Supports AMD Athlon™ & Duron™ Processors
- Savage4 3D AGP graphics
- AC'97 16-bit stereo sound
- Supports up to 1GB SDRAM
- 52x Creative Labs CD-ROM
- Internet Keyboard
- 2 Front USB Ports
- 3 button scroll mouse.
- Stereo speakers
- 1 Year Toll Free Tech Support

Simply add the following to complete your system:
Athlon or Duron CPU, Fan, Memory, Hard Drive, Modem/Network card, Operating system, Monitor

\$199

**Add a 17" Monitor for only \$149

TFCWO.com 800.394.4503

Sales Hours : Mon-Fri 9AM-7PM EST Technical Support Hours : Mon-Fri 10AM-6PM EST
Customer Service : 1.800.394.4503 Technical Support Line : 1.800.407.3232

Price, specification, and terms are subject to change without notice. Thompson's Computer Warehouse is not responsible for errors in typography and/or photography.
TRU is a trademark (TM) of Thompson's Computer Warehouse. It can not be used, copied, or reproduced without the written consent of Thompson's Computer Warehouse.
*Due to FCC rules that restrict power output, current download speeds are limited to 53kps, upload speeds are limited to 33.6kps. Actual speeds may vary depending on line conditions.
Actual items may differ from pictured. **Quantispeed architecture operates at 1400MHz ***Quantispeed architecture operates at 1467MHz ****Quantispeed architecture operates at 1533MHz

Copyrighted material

Meet the New Pentium 4

Intel's latest flagship CPU is smaller, faster, and just plain meaner

If you thought Intel was playing clock-speed games in 2001, prepare to hang onto your keyboard. With the introduction of the new "A" version of the Pentium 4, Intel is expected to throttle frequencies to—are you ready for this?—3GHz by the end of the year.

Code-named "Northwood," the P4-A's will feature the 0.13-micron process that Intel introduced with the P-III Tualatin last year. The more efficient process technology shrinks the size of the CPU die, lets Intel grow more CPUs per wafer, and helps the CPU hit higher speeds, thanks in large part to the use of copper interconnects, which replace the aluminum interconnects of yore.

Externally, the P4-A looks the same because it uses the same integrated heat spreader that Intel uses for its other Socket 478 CPUs (you won't be able to buy a P4-A with a Socket 423 interface). Inside the core, the most noticeable change is in L2 cache: Intel was able to double the amount of L2 cache from 256KB (found in the original 0.18-micron Willamette Pentium 4) to 512KB. But even with the larger L2, the P4-A is still some 72 square millimeters smaller than earlier P4s.

Intel says there are no other significant changes to the P4 engine itself—no extra floating point units, no pipeline or logic changes, no superchargers or high-flow air meters, nothing. That's because

Intel normally lets the "process elves" first shrink the chip, after which the "architecture elves" get down to business. To this end, we expect the Pentium 4 to undergo yet another change by the end of this year, but this is just pure conjecture.

We test-drove a 2.2GHz Pentium 4-A and found the new chip to be a serious screamer compared with the 2GHz

Pentium 4. Because our P4-A was locked, we

couldn't underclock it for an apples-to-apples comparison between Northwood and Willamette. If you're considering the purchase of a Pentium 4 box, you should definitely wait for the Northwood version. During performance testing, we saw an across-the-board increase in speed. Sure, some of the performance is directly attributable to the 10 percent clock speed increase, but the larger L2 cache also appears to give the new P4 a boost beyond what one would expect from a mere 200MHz. The boost was most evident in *SYSMARK2001*, which gauges the time it takes for a PC to complete multitasked action scripts in 14 popular Windows apps. In this test suite, the 2.2GHz Northwood coughed up a 19 percent increase over the 2GHz Willamette. The extra L2 also paid dividends in low-resolution *Quake III*, where we recorded a 17 percent frame rate increase with the Northwood.

NORTHWOOD AT A GLANCE

	"Willamette" Pentium 4	"Northwood" Pentium 4-A
Process	0.18-micron, aluminum	0.13-micron, copper
Transistors	42 million	55 million
L1 cache	12KB micro-op cache, 8KB data cache	12KB micro-op cache, 8KB data cache
L2 cache	256KB	512KB
Die size	218mm ²	146mm ²
Thermal	75.3 watts	55.1 watts
Top speed at introduction	1.5GHz	2.2GHz

In our other benchmarks, we saw a clear 10 percent increase across the board. This is actually good news for Intel because it demonstrates that the Pentium 4 architecture has plenty of headroom: A 5 percent performance increase for a 10 percent clock speed boost—a perfectly reasonable result—would have been an indicator that the P4 was running out of gas. Of course, Intel's master plan is to take the P4 architecture to 10GHz, so if the CPU had run out of gas at a mere 2.2GHz, the entire core architecture would be suspect.

So where does all of this leave the perennial Intel vs. AMD battle? Is Northwood an Athlon XP killer? Not quite. Even the 2.2GHz Northwood still loses to the 1.6GHz Athlon XP in some benchmarks—despite owning a whopping 600MHz frequency advantage. But the arrival of 0.13-micron process technology definitely puts AMD back on the defensive, because Intel should be able to march up to 3GHz this year without breaking a sweat. For now, we give Intel the edge in the über-battle, at least until AMD can introduce its own 0.13-micron CPU—code-named Thoroughbred—later this year.

—GORDON MAH UNG

DARE TO COMPARE

	2.0GHz P4	2.2GHz P4-A
SYSMARK2001 Overall	179	213
Quake III MPC Demo	75fps	79fps
Quake III Normal 640x480	236 fps	273 fps
3DMARK2001 Overall	6,970	7,425
Photoshop 6.0.2	75 sec	62 sec
Premiere 6.0	209 sec	190 sec
SiSoft Sandra 2001 CPU	3,869	4,222
SiSoft Sandra 2001 RAM	1,365	1,412
MP3 Encoding	206 sec	186 sec
SoundForge 5b	390 sec	348 sec

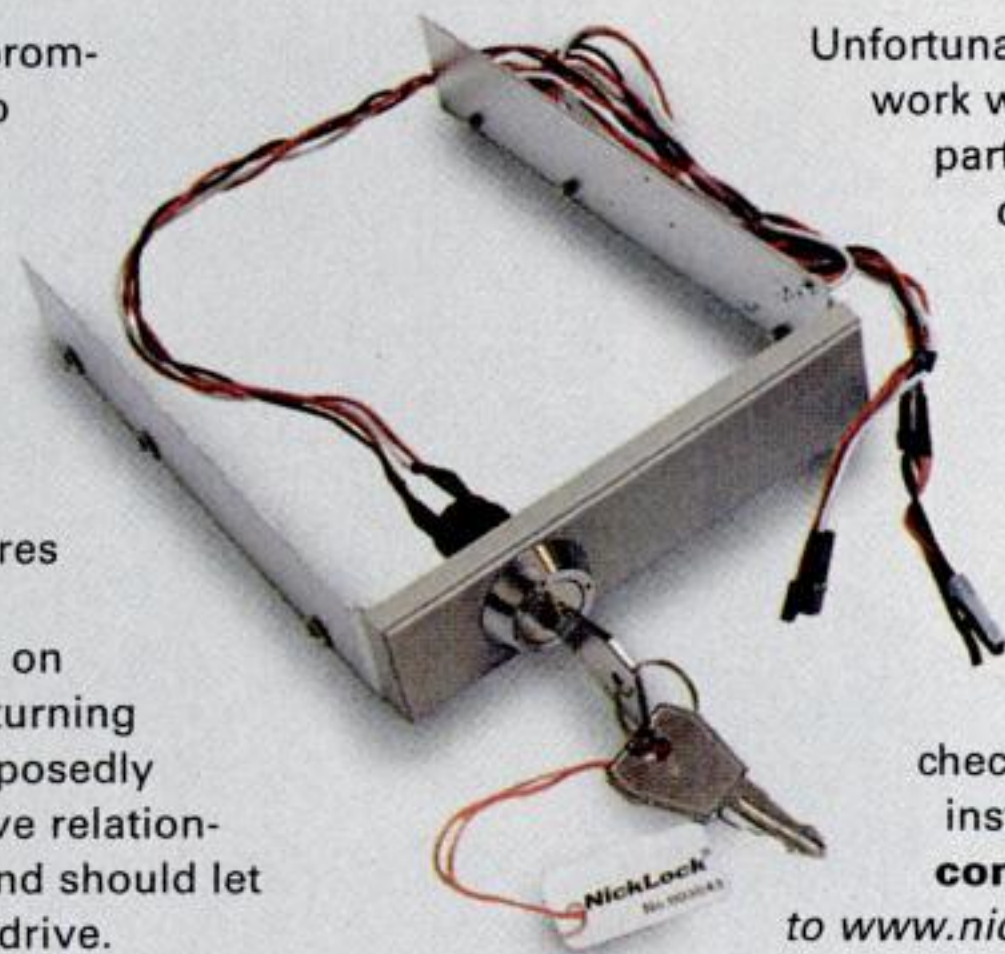
NOTE: Both CPUs were run on the exact same test configuration: Intel D850MD motherboard (production 5 BIOS); two 128MB PC800 Kingston ValueRAM RIMMS; 60GB 60GXP; Windows XP Professional; AVC Sunflower heatsink/fan; Leadtek GeForce3/23.11 Detonator 4 drivers; Intel Application Accelerator.

The NickLock

"Turn your key, Maura. Turn your key!"

While the NickLock's promise of letting you swap hard drives with the flick of a switch sounds alluring, the scheme is actually unreliable and somewhat scary.

A simple keyed switch runs to two wires that replace the master/slave jumpers on your hard drives. By turning the key, NickLock supposedly swaps the master/slave relationship on your drives and should let you boot from either drive.



Unfortunately, NickLock doesn't work well with all hard drives, particularly those that don't default to slave when the master jumper is removed. There's also no electronic safety lock that would prevent damage to a drive if the key were turned with the PC on. If you're looking for easier drive separation, check out Romtec's Trios instead (www.romtecusa.com). Nicklock costs \$29; go to www.nicklock.com.

First Look

Medal of Honor: Allied Assault

Or... 'Saving Private Ryan: The Videogame'

In case you haven't gotten it yet, blowing up Nazis is fun for the whole family. And unlike some other, um, slightly unrealistic WWII games fraught with zombies, *Medal of Honor: Allied Assault* depicts the events leading up to, and following, the Allied invasion of Normandy. You play as Powell, a U.S. Ranger who's assigned to the North African and European theaters. Missions include everything from destroying a Nazi mustard gas production facility to surviving the D-Day invasion of Omaha Beach.

We played a pre-release version of *MOH:AA*, and it looks great! Excellent AI (for squadmates and enemies alike), a plethora of realistic weapons, and some of the most delicious sniping we've experi-



Steady, soldier, we'll have you up that beach in no time.

enced in any game, anywhere. The most surprising thing is that even stealth-oriented levels are fun. *Medal of Honor: Allied Assault* is expected to ship in January.

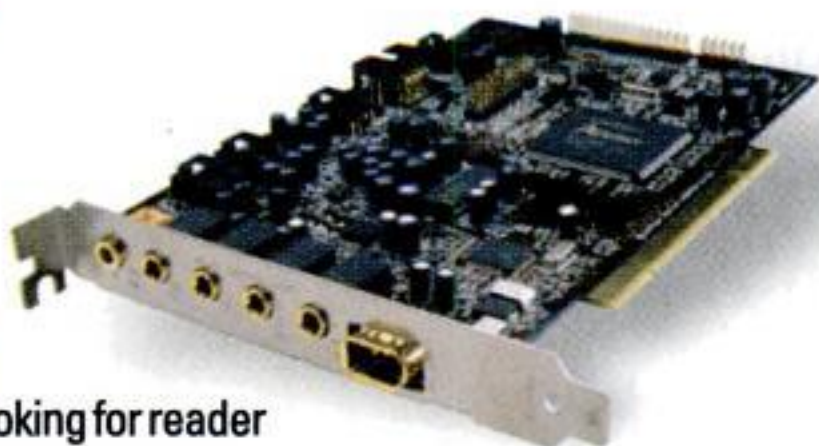
HERE'S YOUR CHANCE TO CONTRIBUTE TO...

Reader Reviews

In the months ahead, the magazine will feature a new section called "Owner Opinions"—this is your chance to report on the pluses and minuses we missed in our own published reviews. Currently, we're looking for reader reviews of the following products:

- ATI Radeon 8500
- Celestix Aries Home Server
- Falcon Mach V desktop PC
- Creative Labs Sound Blaster Audigy
- IBM 60GXP hard drive
- PlexWriter 24/10/40

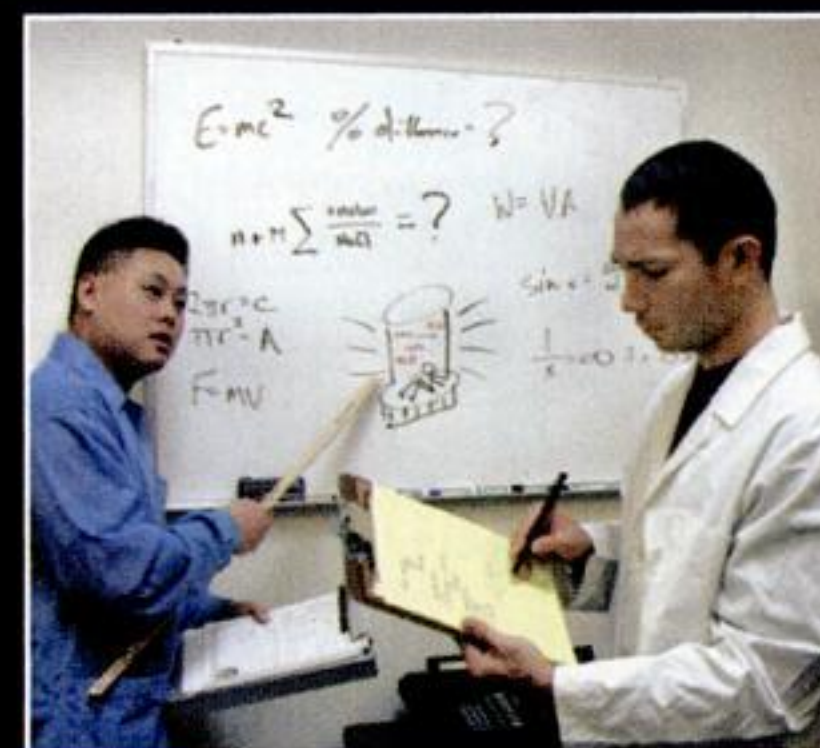
If you own one of these products and would like to contribute, send an e-mail to owneropinions@maximumpc.com. Name the precise name/model number of your gear and include a descriptive, detailed, 300-word review of your most significant likes and dislikes. Include your real name, because *Maximum PC* reviewers don't use pseudonyms!



Weird Science

The best thing about having a lab all decked out with cool technology isn't that we're able to thoroughly challenge the claims of hardware and software vendors, it's that every so often, when we find ourselves with some downtime, we get to conduct our own experiments.

Like that Monday afternoon a couple months ago....



Our objective? To create a being in our own likeness.



It stood to reason that a little salt on a motherboard would sire our computer geek prototype.



And with the aid of our Lab gestation pod, we successfully incubated our first *Maximum PC* intern.

To be continued...

Dell Inspiron 8100

Fastest game in town

One year ago, if you showed up at a LAN party toting just a notebook PC, you would have been laughed off the premises. But that ain't the story anymore. Dell's new Inspiron 8100 takes notebook gaming to a dan-

gerously attractive higher level. Featuring the fastest Intel mobile CPU to date, as well as the fastest mobile graphics chipset available, the latest Inspiron is the speediest gaming notebook we've ever seen. And don't think for a second that the 8100 is some kind of dainty, titanium-shelled butterfly you use at the cafe while sipping a no-froth, double-decaf latte with steamed skim milk. No, partner, the 8100 is designed to annoy the person next to you on the plane when you're playing *Return to Castle Wolfenstein* with the sound turned up.

If you saw Dell's 1GHz Inspiron 8000, you'll recognize the 8100—same body, but with two new core subsystems. Way back in mid-2000, the 8000 was a hot job with its 1GHz Coppermine Pentium III and 32MB GeForce2 Go 3D chipset from nVidia. The 8100, however, trumps its predecessor with a 1.2GHz Tualatin Pentium III-M.

Gimme some skin:

The 8100 is so "Texas" it should have come with a 10-gallon hat and SAA Colt .45 revolver.



This particular P-III doubles the previous CPU's L2 cache to 512KB, adds a data prefetch logic unit, and employs a 0.13-micron process instead of the less efficient 0.18-micron process.

But the eyebrow-lifting feature of the Inspiron 8100 isn't its 1.2GHz CPU, but rather ATI's new Mobility Radeon 7500 with 64MB of DDR RAM. Issues of "cooked drivers" aside (see our January issue for the skinny on ATI's driver shenanigans), the Mobility Radeon 7500 stands as the fastest graphics chip available at press time—at least until nVidia answers with its upcoming NV17M chipset.

In *Quake III*, the 1.2GHz P-III-M/Mobility Radeon 7500 combo was nearly twice as fast as the previous-generation 1.13GHz P-III-M/Mobility Radeon that powered the HP 6100 we reviewed in October 2001. And compared with the Inspiron 8000 we reviewed in June, the Mobility Radeon 7500 is about one-third faster in *Quake III*.

Dell didn't just stop at upgraded graphics and CPU power, however. Our 8100 came with a combo drive that burns at 8x, and just as we went to press, Dell made a 16x burner available! Dell also ups the hard drive to 60GB, although our unit came with a 48GB drive. (Dell is dropping the 48GB for a 40GB option.) By using a combo drive, Dell was able to configure our unit with two batteries. With two cells, the 8100 actually let us watch *all* of Oliver Stone's *JFK* with 6 percent of the battery charge left over. That's something no other note-

The Inspiron 8100 is the best gaming notebook available, bar none.

book has ever done before!

But not all was perfect. We did have a small problem with the charging system, which forced us to use another notebook to charge the cells for our DVD test. Dell says the problem was unique to our test unit, but rest assured, we'll be monitoring the situation carefully (please let us know if you experience similar problems). We also would have liked it if Dell enabled the built-in WiFi capabilities of the notebook.

We give Dell big props for even considering—let alone making—such a beast of a notebook. With the fastest CPU and graphics available, a fat hard drive, built-in FireWire, great audio, an 8x combo drive, and a 1600x1200 screen, the 8100 is overwhelming. Say what you will about the largest PC maker on the planet, but its notebook team is committed to pure PC power.

—GORDON MAH UNG

UNDER THE HOOD

THE BRAINS

CPU	Intel Mobile Pentium III-M 1.2GHz (800MHz speed-stepped)
RAM	256MB PC133 SDRAM (1GB max capacity)
I/O Ports	Dual Cardbus PC Card slots, VGA, composite video out, parallel, serial, two USB 1.1 ports, PS/2 keyboard and mouse port, mic-in, line-in, head-phone, IrDA, IEEE-1394

NETWORKING

Modem	3Com V.90 in MiniPCI slot
LAN	3Com Fast Ethernet in MiniPCI

DISPLAY

Videochip	ATI Mobility Radeon 7500 64MB DDR SDRAM
Display	15-inch, 1600x1200

STORAGE

Hard drive	IBM Travelstar 48GB
CD-RW/DVD-ROM Combo	Toshiba SDR-2102 8/8/8/24

SOUND

Audio Chip	ESS Maestro
-------------------	-------------

WEIGHT

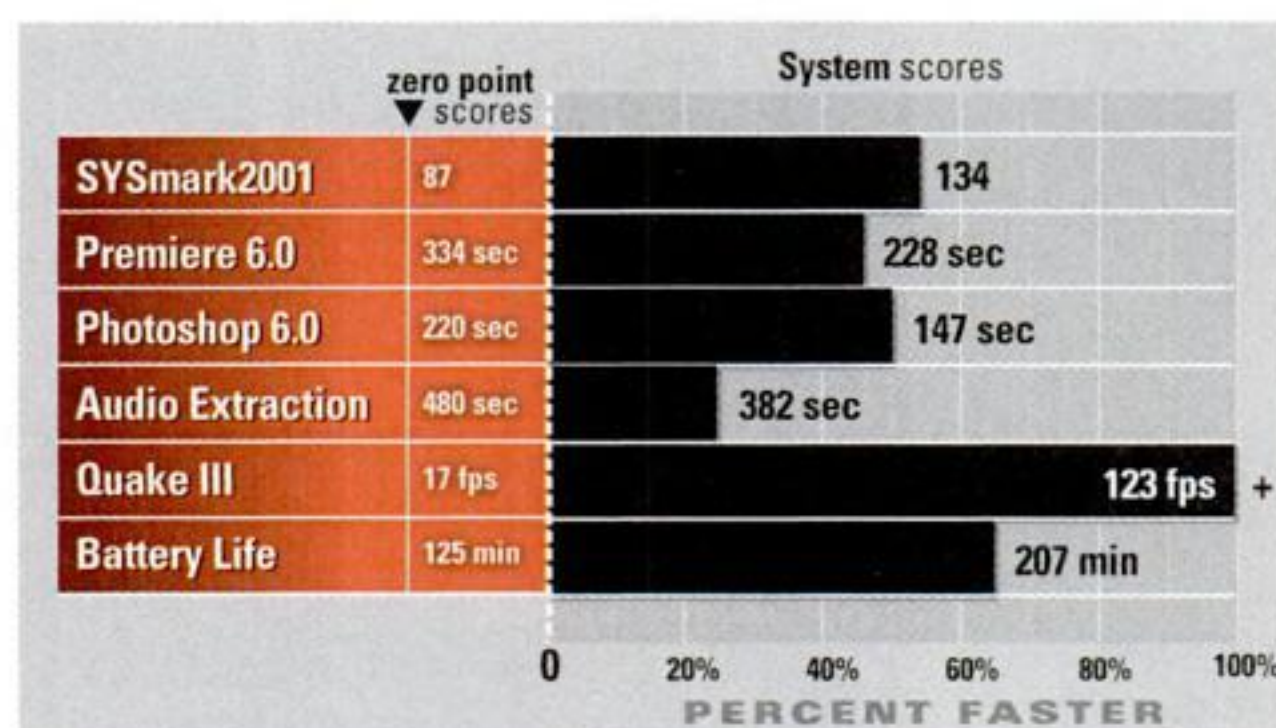
Lap weight	8.5
Carry weight	9.3

BUNDLE

Microsoft Windows XP Home, Office XP Small Business, Roxio Easy CD Creator 5, Intervideo WinDVD 2000, Dell Image Expert

BOOT: 39

DOWN: 10



Full benchmarking details in the Mag Reprints section of MaximumPC.com



MAXIMUMPC VERDICT

Inspiron 8100
DELL

+ BEE'S KNEES

A 1.2GHz P-III and Mobility Radeon 7500 make this notebook the fastest game in town.

- ITCHY LIKE FLEAS

With its weight and bulk, this Dell would get the nickname "Tiny."

877.942.3355 www.dell.com

\$2,925 (w/ 40GB hard drive)

9

Devastator 9908 Arcade Controller

MAME lovers, your time has come!

Ever miss the carefree days you spent as a youth, holed up in dark and smoky arcades, playing classics like PacMan, DigDug, and 1942?

Allow us to introduce you to the Multiple Arcade Machine Emulator (MAME). The mission of MAME developers is simple—to propagate a single hardware emulator that works with every arcade game ever made.

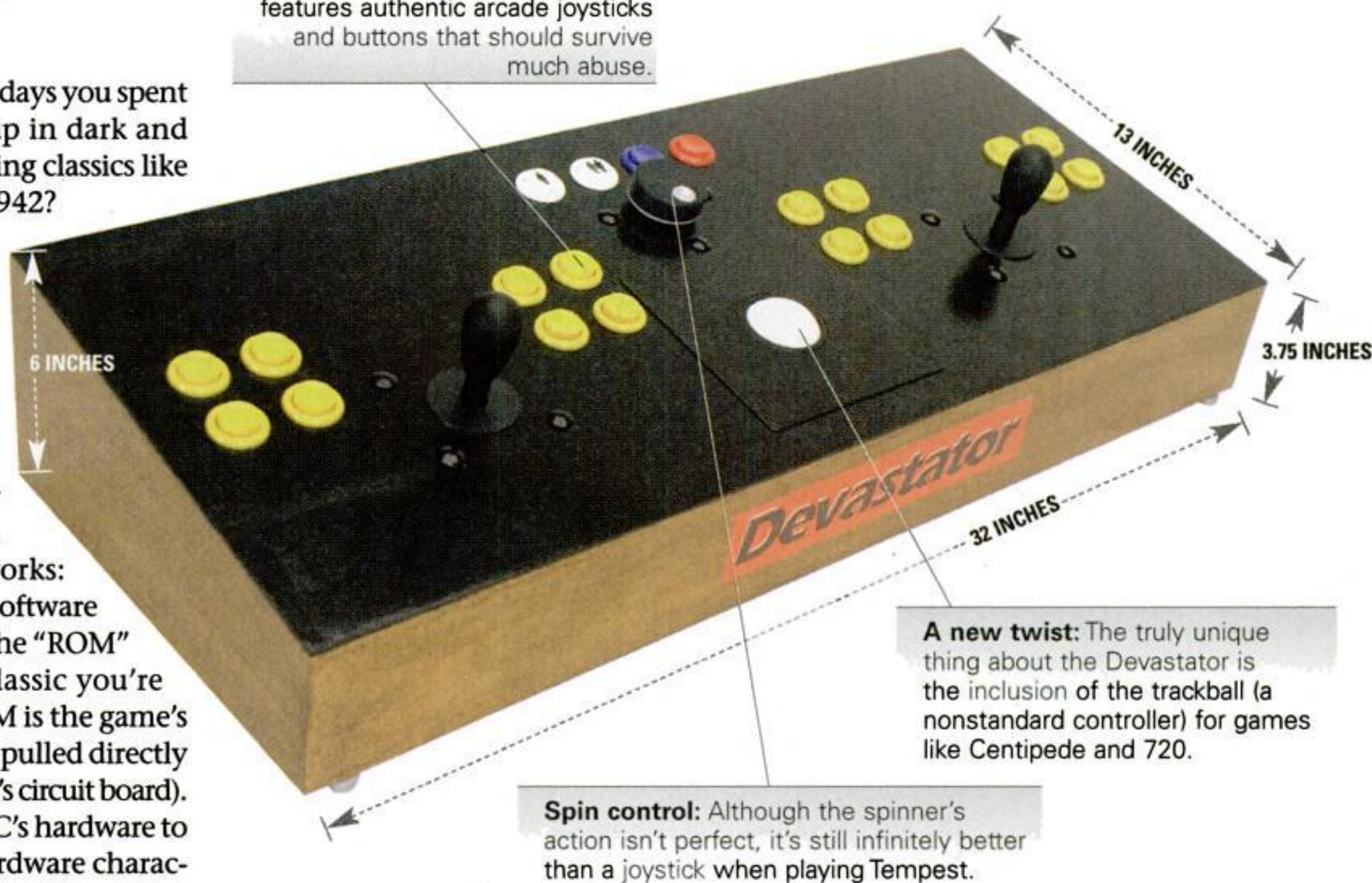
Here's how MAME works: You install the MAME software on your PC, then load the "ROM" of whichever arcade classic you're itching to play (the ROM is the game's raw programming code pulled directly from the arcade machine's circuit board). MAME then uses your PC's hardware to literally emulate the hardware characteristics of the arcade machine, then runs the ROM on that virtual platform. The result is old-school gaming in the privacy of your home. Of course, it's legal to play these games only if you also own the physical arcade machines or have purchased the ROM from a legal source (uh, like we did), but the MAME software itself is 100 percent legal.

All of this leads us to the Devastator, a custom-built arcade controller designed specifically for MAME addicts who are sick of struggling with mere PC keyboards. The Devastator includes two arcade-quality four-way joysticks, with authentic four-button arcade controls on either side of each stick. But the fun doesn't end



Arcade blow-'em-ups like 1943 just aren't as fun without the appropriate controllers.

Takes a lickin': The Devastator features authentic arcade joysticks and buttons that should survive much abuse.



A new twist: The truly unique thing about the Devastator is the inclusion of the trackball (a nonstandard controller) for games like Centipede and 720.

Spin control: Although the spinner's action isn't perfect, it's still infinitely better than a joystick when playing Tempest.

there. Smack dab in the middle, you'll find a trackball and spinner, which are exactly what you'll need to get the most out of your *Tempest* and *Centipede* ROMs. The complement of controls is rounded out by a one-player button, a two-player button, and two coin buttons.

We're happy to report that the various sticks and buttons have withstood countless hours of "testing"—along with the staffs of *NextGen* and *PC Gamer*, we've abused the Devastator to high hell, banging the thing as if it were owned by a callous exploiter of youth and not a product on loan from a humble entrepreneur named Jim Krysch. With a little tweakage, the trackball works great in *Centipede*, *Millipede*, and *Missile Command*. Our only real gripe is with the spinner, which gets the job done, sure, but just doesn't have that authentic arcade feel. It's simply too grippy—too heavy for the wild, fast spinning we expect to find while playing *Tempest* or *Arkanoid*. We think the spinner should be a little less resistant around the axis and a little heavier around the edges to allow it to spin for two or three rotations on one twist. Nonetheless, the spinner is certainly functional, especially after tweaking MAME settings for speed and sensitivity in each game.

The real problem with our Devastator review unit is its odd button layout. While we appreciate the ambidextrous

setup, we'd much rather see a single six-button layout next to each stick so we could play *Mortal Kombat* and *Street Fighter II: Championship Edition* as they were intended to be played. In the configuration we received, the Devastator is useful only for games that require four buttons or fewer. Luckily, if you don't mind spending a few more bucks, the folks at Treyonics will be more than happy to substitute different joysticks, or even button layouts.

If you're a full-time arcade gaming freak, the Devastator will change your life. Thanks to MAME and the Devastator, your favorite games from the early years of videogaming can be played again—almost exactly as you remember them.

—WILL SMITH

MAXIMUMPC VERDICT

Devastator 9908
TREYONICS

+ TURN-ONS

The Devastator we reviewed is perfect for almost any arcade game made before 1990.

- TURN-OFFS

The spinner just doesn't feel right for games like *Tempest* and *Arkanoid*. The button config we reviewed can't accommodate six-button fighting games. While the construction is solid and the buttons are authentic, the wooden bodywork and paint job doesn't perfectly emulate arcade design.

www.tomheroes.com

\$450

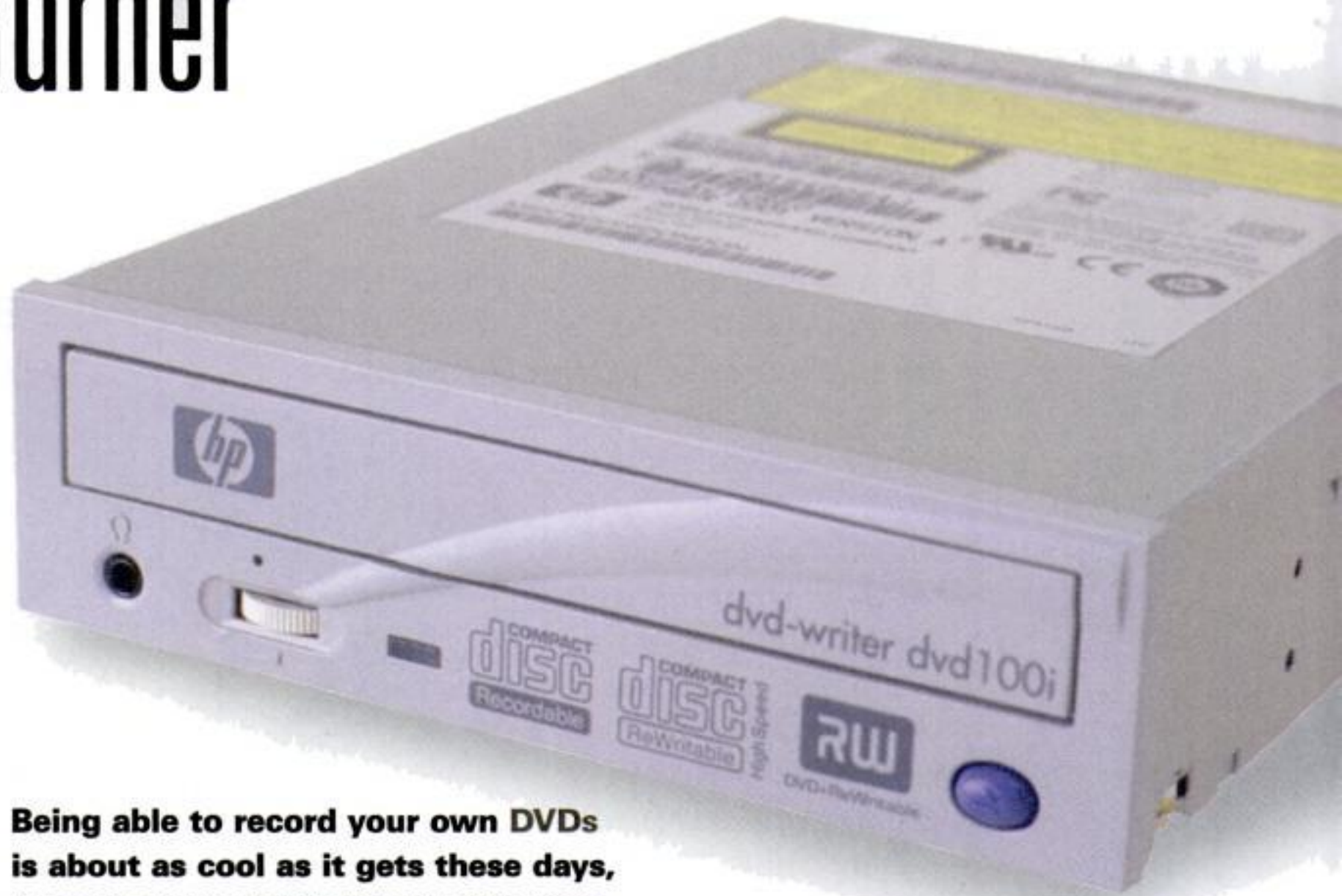
8

HP dvd100i CD/DVD Burner

We waited *how* many years for this?

When Pioneer introduced its DVR-A03 DVD burner (reviewed in July 2001) under the DVD-RW standard, manufacturers behind the competing DVD+RW standard began to turn up the volume on their own format. "It's all about compatibility," they said, suggesting that their "any day now" +RW drives were going to deliver better compatibility with DVD-ROM drives and set-top players. We were certain the +RW folks were gearing up to crush the competition with faster speeds, better software, and greater compatibility. But now that we've received our first +RW drive—HP's dvd100i CD/DVD burner—we're beginning to wonder if the +RW developers were simply delaying their roll-out in order to deliver a product that worked at all.

Now, HP did indeed deliver on one of the big promises of +RW—sheer speed. The dvd100i beat -RW drives with consistently faster rewriting speeds and transfer rates across all CD and DVD burning times. Specifically, the HP drive,



Being able to record your own DVDs is about as cool as it gets these days, but our tests showed that +RW discs don't play well with others.

rated at 2.4x for rewriteable DVDs, wrote 4.25GB of data to its disc in 31 minutes. This is almost exactly twice as fast as the 1x Pioneer DVR-A03, which took 57:26 minutes to write the same data to its rewriteable media. Still, in write-once/DVD-R mode, the Pioneer -RW drive can write the same amount of data in 29 minutes and with much greater compatibility than either -RW or +RW. (The higher reflectivity of rewriteable media causes many DVD-ROM drives and set-top players to think the disc is dual-layer—which it is not—resulting in less compatibility.) The DVD+RW camp is proposing a write-once "DVD+R" format, but no promises have been made, and even if there were, we wouldn't bet our Lab on it.

All of the HP drive's bundled applications installed with minimal intervention, and a booklet included with the drive explains simple recording procedures. The bundled MyDVD 3.0 authoring software is a vast improvement over the 2.3 version. In fact, its streamlined interface makes it seem like a different program. But for some reason, the developers took away the freedom to place buttons wherever you want them, as you could in 2.3. So all your DVDs come out looking factory-issued.

The dvd100i is a competent drive, and six months ago we would have been all over it. There's no question that it's faster than Pioneer's A03, and its CAV reading (but not writing) of random-access for data discs is much more efficient than the A03's CLV method. But is anyone really buying DVD+RW just for data backup purposes? It would be

THE BUNDLE

Sonic's MyDVD, HP DLA, HP RecordNow, HP Backup, CyberLink's PowerDVD

cheaper to buy another hard drive or two, or hire an assistant.

The problem is, we can't think of any reason to stick with this standard, which provides too little, too late. DVD authoring and sharing is the reason you'll shell out \$600 for a DVD burner, and if you want to share your discs, we can't recommend the dvd100i when there's a superior drive already available for the same price. Even Sony—one of DVD+RW's founding members—chose to put Pioneer's DVD-RW in its own line of VAIO computers!

But hey, as we were once told by a few wise people, "it's all about compatibility."

For more information on competing formats for recordable DVDs, see *Beyond the X-Rating* in our September 2001 issue.

—LOGAN DECKER

DARE TO COMPARE

SET-TOP COMPATIBILITY

	dvd100i (+RW)	Pioneer A03 (-RW)
Toshiba MD-1502 (DVD-ROM)	No	Yes
NEC DV5500A (DVD-ROM)	No	Yes
Pioneer 115 (DVD-ROM)	Yes	Yes
Hitachi GD7500 (DVD-ROM)	Yes	Yes
Samsung SN308B (DVD-ROM)	No	Yes
NEC DV5800A (DVD-ROM)	Yes	No
RCA Divx RC52312 (set-top)	No	Yes
Sony RMSS300 (set-top)	Yes	Yes
Panasonic DVD-RV30 (set-top)	No	Yes

DVD+RW promised higher compatibility with set-top players, but the chart above seems to suggest this was a big fat lie.

THE BENCHMARKS

	DVD	CD
Average data transfer	4.57MB/sec	3.63MB/sec
Random/full-stroke seek (ms)	152/296	109/291
Audio extraction (min:sec)	-	6:31
Data burn (min:sec)	31:18	7:52
CPU utilization	20% (2x)	51% (8x)

NOTE: The data CD burn benchmark uses the bundled applications to create a 647MB CD. The data DVD burn benchmark uses the bundled applications to create a 4.25GB DVD. For more information on how we benchmark optical drives, go to the Mag Reprints section of MaximumPC.com.

MAXIMUMPC VERDICT

dvd100i
HEWLETT-PACKARD

+ SNAPPY

The dvd100i writes to rewriteable DVD media twice as fast as Pioneer's A03, and CAV reading of data discs resulted in much more efficient access times.

- CRAPPY

Unable to even match Pioneer one-for-one in compatibility with set-top devices or DVD-ROMs. What's the point?

www.hp.com 800.752.0900

\$600

6

Bantam BA350 MP3 Player

Wee player, monster bargain

If you were to step on one of those bite-size candy bars popular during Halloween, you'd end up with something about the size and shape of Bantam's BA350 MP3 player. Weighing in at a mere 2.25 ounces, the BA350 packs in more features than most larger and more expensive players, beginning with a generous 128MB of internal memory (and an MMC card slot for expansion), as well as a built-in lithium-ion battery that recharges whenever the unit is connected to your USB port—even when you're downloading songs.



The controls are so simple and accessible that even a drunk could manage them. Two buttons at the top control the play/pause functions and activate the menu options, and the slightly elevated directional pad at the bottom of the player lets you navigate the menus, switch tracks, scan, and adjust the volume. Although the accompanying software looks like it was built with a Windows 3.1 development kit, using it is still a snap. Drag and drop tracks onto the right-hand pane and they are automatically queued for upload.

We didn't have any qualms with the BA350's sound quality, but there were annoying pops and clicks between tracks, and the maximum volume could stand a little more headroom. There are just five preset EQ settings with no option for customization, and most of the presets are too heavy-handed to be useful. There's also no protective cover for the MMC slot—not good.

Despite a few first-generation nicks, the BA350 is an awesome combination of great design, large capacity, and reasonable price.

SUNNY SIDE UP: It's tiny, sounds great, and is easily controlled even when it's in our pockets.

BURNT TOAST: The BA350 comes with a generous set of accessories, but we would rather have received the (optional) AC adapter to charge the unit with-



Be careful with Bantam's BA350—this miniscule MP3 player is easily swallowed.

out connecting to a USB port.

MAXIMUM PC VERDICT: 9

\$200, Bantam Interactive, www.bantamusa.com, 314.802.0132

—LOGAN DECKER



OCZ Titan Series

Titan 3 GeForce 3

OCZ Octane Series

Octane 600Ti

Octane 240Ti

www.ocztech.com



Pen Scanner Scuttlebutt

When is a cigar really not a cigar?

Despite their decidedly phallic shape, there's no reason why anyone should be embarrassed to use one of these electronic gizmos in public. Pen scanners are indeed clever little gadgets designed to capture text and transmit it to your computer. In theory, you should be able to take them anywhere to grab text on the fly.

WIZCOM QUICKLINK PEN

The QuickLink's performance was less than sublime: It scanned a *National Enquirer* at no better than 50 percent accuracy (think mangled letters and words), and it failed entirely to scan a transparency. The good news is that the pen offers all sorts of extras, such as the ability to collect Internet addresses and download them to the appropriate software. Sure enough, it lifted a URL off a business card and popped it into our browser as easily as popping a *Counter-Strike* camper with a Glock. It also scanned our copy of *PC Gamer* beautifully, capturing every irreverent word.

The QuickLink is rated to hold 1,000 pages of text, ships with a carrying case and serial cable, and has an LCD that can display three lines of text at roughly six words per line. It also has a built-in address book and can provide literal translations for eight languages. The unit can scan six- to 22-point text in a variety of fonts and color combinations, as long as none of them are red/white or blue/black (red interferes with all pen scanners' red scanning light, and this unit needs high contrast to distinguish characters). Some will argue that mangling the *Enquirer's* text is an improvement, but we require better than 50 percent accuracy from any scanning project.

C TECHNOLOGIES C-PEN 800C

Not only can the 800C display up to seven lines of text, it also has the ability to beam scanned information to a PC and the option to use the pen as a writing implement—just write letters on any surface and they appear in the pen's screen! To test this baby, we dragged out a Victoria's Secret catalogue. Scanning the text was faultless. Scanning the visuals was fruitless. Beaming the text was flawless. And

The pen is mightier than the sword, or something like that.

the note we wrote to ourselves regarding Jon's lingerie preferences worked just fine.

Transparency scanning was nearly perfect, but while the movie review section of our local newspaper scanned reasonably well, the pen was incapable of correcting cruel blasphemy about our hero, Jar Jar Binks. Extra features include a dictionary (to immediately learn the meanings of scanned words), translation functionality, and the ability to beam scanned business card information. Although the C-Pen can scan up to 22-point text in a variety of fonts and colors, it too was baffled by red/white and blue/black combinations.

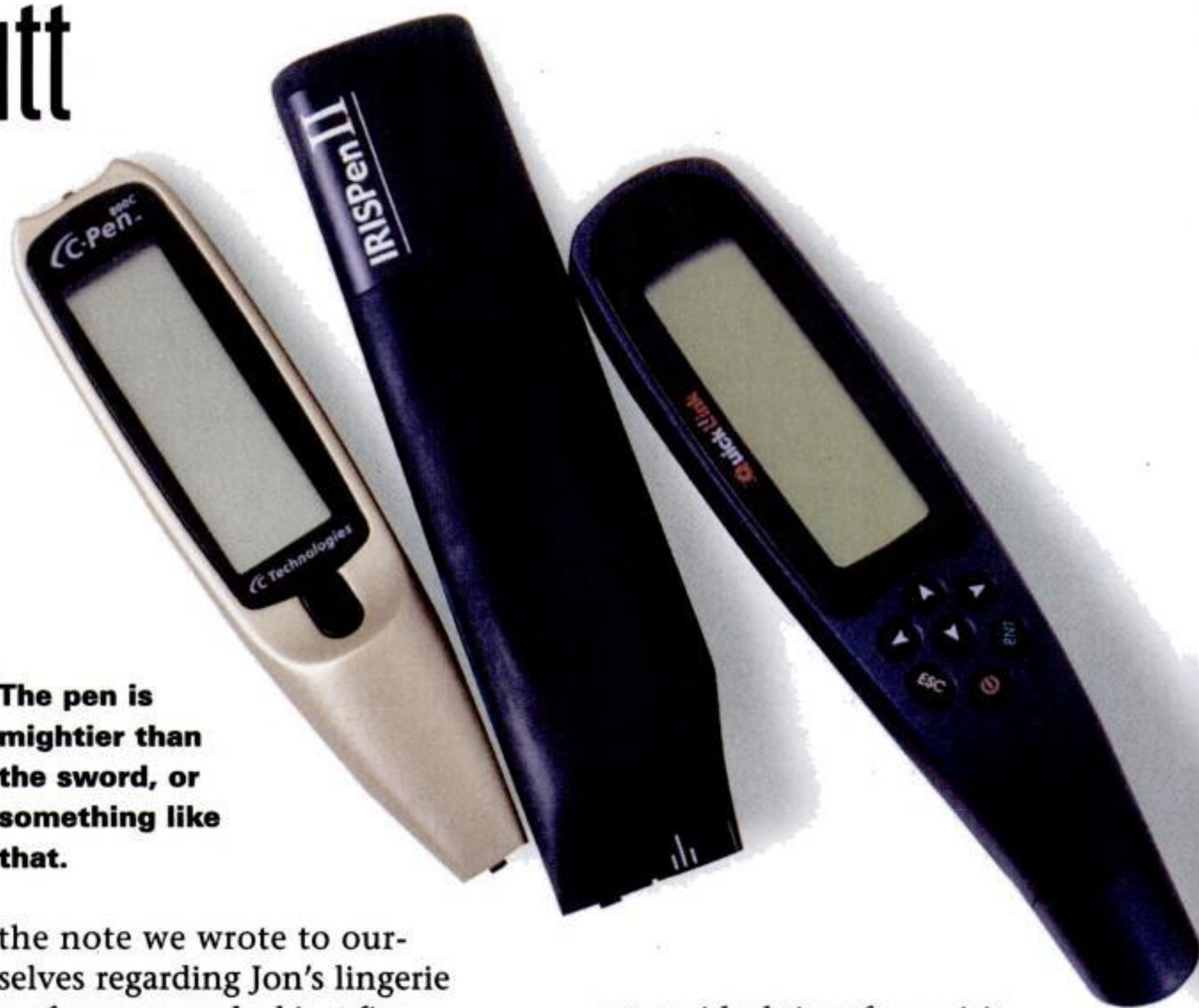
IRIS IRISPEN II EXECUTIVE

There's a scanner, but no case. There's Windows and MacOS software, but no batteries. There's a well-written manual, but it includes crappy black-and-white pictures. What gives?

The really bad news is that because this scanner must be connected to a USB port to work, it's not even portable. The really good news is that because your computer is doing all the OCR processing, the IRISPen II is significantly faster and more accurate than the other scanners in this roundup. Excited by its single, programmable button and features ranging from text-to-speech functionality to the ability to scan small pictures, we eagerly reached for reading material—only to discover we had exhausted our meager supply with the other pens. Never fear. We bravely visited a neighbor, borrowed *Maxim*, the *Toronto Sun*, and even a transparency, learned that 3:00 a.m. is

not an ideal time for a visit, and scanned all three—as well as the logo off a business card—perfectly.

—ERIK SEBELLIN & S.J. ROSS



MAXIMUMPC VERDICT

QUICKLINK
WIZCOM

+ BOFFO

Tons of extras.

- BUNK

Worst scanning accuracy of the bunch.

888.777.0552 www.wizcomtech.com

\$170

6

MAXIMUMPC VERDICT

C-Pen 800C
C TECHNOLOGIES

+ BUENO

Can be used as an actual writing implement. Scanning quality was excellent.

- MAL

Like most pen scanners, it has trouble resolving some color combos.

770.680.2570 www.cpen.com

\$180

8

MAXIMUMPC VERDICT

IRISPen II Executive
IRIS

+ LIKEY-LIKEY

Superfast and wonderfully adept.

- BOO-HOO

Not portable—requires a constant PC connection.

561.395.7831 www.irispen.com

\$130

8

CD Labeler Looksee

Not all CD label applications are created equal

Most power users rely on *Nero 5* for CD burning duties, then print out a label created in the program, and probably never even consider that their experience could be improved. Well, answer this: Are you totally satisfied with your CD labels' appearance? After all, *Nero* offers just a rudimentary array of design options, and lacks CD labeling apparatus. That's right, there are instruments expressly made for the easy, smooth application of CD labels. We review two of them here.

SURETHING CD LABELER, DELUXE

Both of the labelers we tested come with a supply of labels and label-designing software that includes templates, clipart, and the ability to import graphics in a variety of formats. Of the two, the *SureThing* package is more versatile. A comprehensive user's guide and intuitive button layout make it easy to navigate the app's many features. The *SureThing* program includes more than a 1,000 different backgrounds, 16 different design templates, and seven font options within each template. Handy preview and browse capabilities make the vast number of options manageable.

The kit includes 22 standard and full-faced CD labels, four jewel case inserts, four mini-CD labels, and 26 CD hub labels (for the hub-labeling inclined).

The applicator is simple enough. In fact, "applicator" seems almost too technical a word for the flat, oval-shaped, plastic doodad that serves as such. Peel



If you're not satisfied with the SureThing as an applicator, try using it as a durable, if small, serving tray.

off your printed label, and place it face-down on the applicator, where it's held in place (kind of) by slightly raised outside edges and a lip in the center. Now



The AfterBurner applicator is the pinnacle of CD labeling technology.

use your fingers to press your CD onto the label. While it's a more precise method than applying a label freehand, not all our applications were flawless. Depending on how flat the label lies, and how evenly you apply pressure with your fingers, you may still end up with wrinkles.

EVERY AFTERBURNER

The *AfterBurner* software offers 10 templated designs, and for each template, you have the choice of two Layout Font options. Put another way, *AB* loads approximately 28MB of clipart, backgrounds, and templates onto your PC compared with the 540MB that come with *SureThing*.

There's scant documentation to help you get started. A bundled tri-fold brochure serves as a compendium of the software's features and installation process. There's also online help available. That's important to remember, as little of the program is intuitive.

The *AfterBurner* labeling system includes six jewel case inserts and 20 white matte Avery CD/DVD labels, all of which are full-faced (that is, they cover all of a CD's surface except the hole). The Avery matte labels were capable of better inking than the matte labels that come with the *SureThing*. A good thing, because with the *AfterBurner* applicator, you're confined to using Avery brand labels, which bear uniquely perforated tabs. The tabs prove handy because you never need touch the labels' sticky side during application. Don't even think about trying non-tabbed labels with the *AB*, because the small protruding posts on the applicator that hold the tabs in place are the only things preventing the label from curling up and becoming unmanageable.

The *AfterBurner* applicator looks more serious than the *SureThing*. Your newly printed label is placed sticky-side-up on

a foam disc at the center of the applicator. With the CD on top of the label, you simply push the arched contraption flat using a knob that sticks up through the disc's center; this evenly affixes the label to the CD. Pop off the disc, tear away the perforated tabs, and admire a perfectly smooth and centered label. Every time.

Besides the disparity in their templated designs, the programs that come with both of these applicators are comparable, and both unfortunately lack *Nero*'s useful ability to create a track list from the file names on your disc. But when it comes to the labeling apparatus, there's one obvious winner—the *AfterBurner*. And truth be told, you can use *Nero* and the *AfterBurner* applicator together simply by selecting an Avery brand label from the *Nero* Paper Stocks option.

—KATHERINE STEVENSON

MAXIMUMPC VERDICT

SureThing CD Labeler, Deluxe
MICROVISION

+ HOT FUDGE SUNDAE

Design options aplenty and intuitive navigation.

- BRUSSELS SPROUTS

Application method is far from foolproof. And 26 CD hub labels? C'mon.

760.431.7781 www.surething.com

\$40

6

MAXIMUMPC VERDICT

AfterBurner CD Labeling System
AVERY

+ TERMINATOR 2: JUDGEMENT DAY

Perfect application of labels every time.

- FRIED GREEN TOMATOES

A little more instruction on using the program would be helpful.

800.462.8379 www.avery.com

\$30

9

Intruder Alert!

Two devices that use your body to lock down your PC

If you're unwilling to wipe those illegal warez off your hard drive, you may as well protect your PC from the prying eyes of your spouse, children, or parents. We review two "biometric" security devices that promise to secure your illicit rig.

U.ARE.U PERSONAL

There's a reason why no one uses passwords to secure his or her PC—they're a pain to remember and accurately type in. Enter the U.are.U Personal fingerprint recognition system, which takes all the hassle out of PC security. Via a simple USB connection, the U.are.U Personal associates your unique epidermal ridges with a user account.

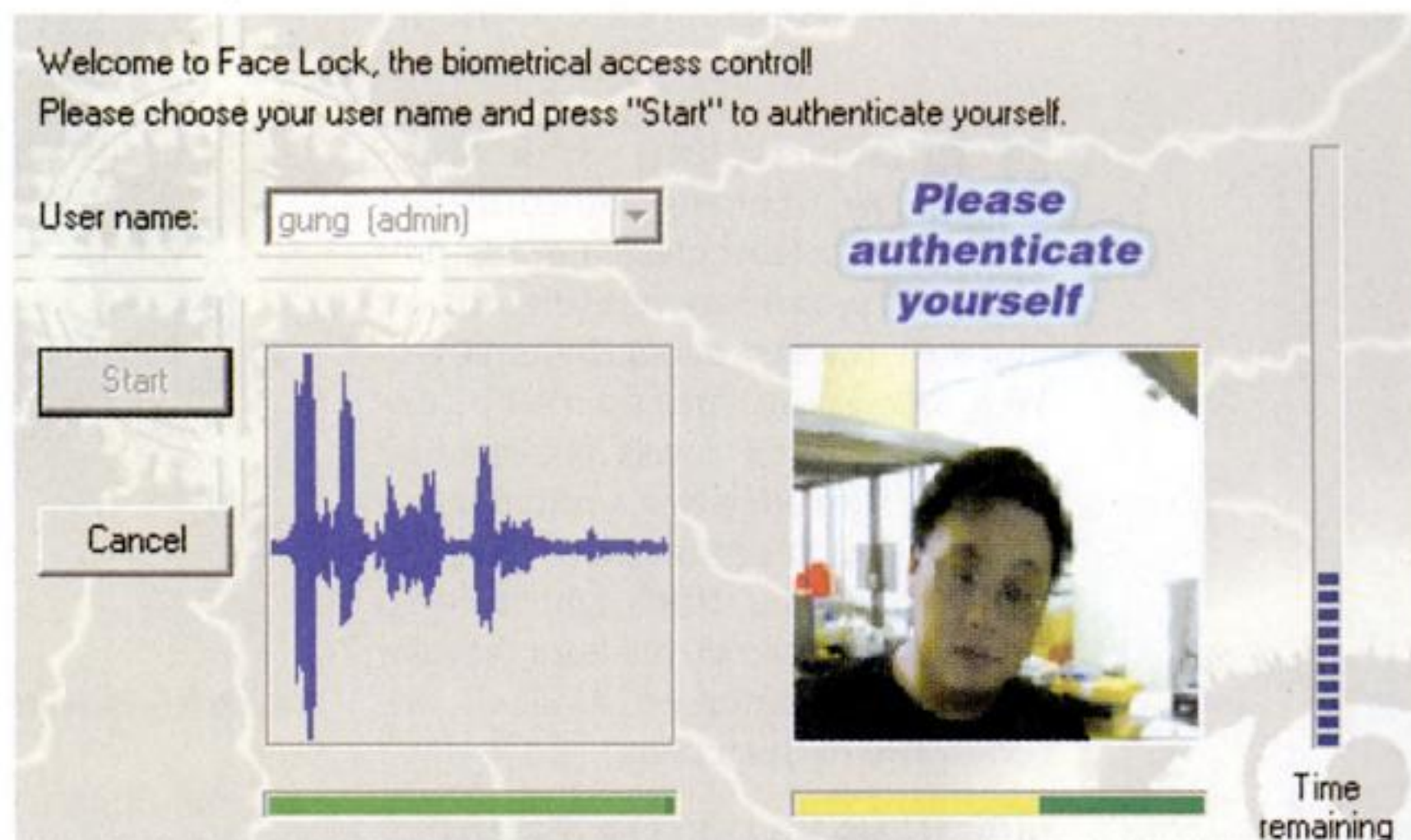
This Windows XP-only device lets you quickly switch access among users by simply pressing a finger to the scanner. In our testing, the recognition was downright amazing, even when our fingers weren't hitting the sensor straight on. The Windows XP software bundle lets you associate your fingerprint with specific applications so that only you can access them.

You can also associate your fingerprint with web accounts, so instead of typing a password to access, say, your Yahoo mail account, you can just scan your finger and the U.are.U application will enter your password for you. The software will also let you encrypt files

The U.are.U Personal is amazingly accurate and offers reliable security, but only with Windows XP.

using your fingerprint.

The U.are.U Personal still allows the use of passwords for accessing accounts on the computer. While this provides a trusty fallback should your fingerprint scanner break down, it also lets enterprising hackers do their mischief the old-fashioned way. Of course, it's arguable that this obvious security



Face Lock's Achilles' heel is Windows 98's inherent inability to keep its files secure.



hole is for the better: After all, If your computer's data were really valuable and unavailable any other way, a criminal might be compelled to cut off your fingers or force you to unlock your PC at gunpoint in order to gain access. The company says future versions of the scanner may check to see if the finger is attached to a living person before unlocking the PC. Seriously.

In a day and age when most PC biometrics are just fluff and gimmicks, the U.are.U Personal delivers the goods—and it delivers it all for a damn good price.

FACE LOCK

Pick up the box for Data Becker's *Face Lock* and you'll think it's just another cheesy program that should be sold by spam mail with the header "Incredible deal!" However, *Face Lock* is a surprisingly powerful program for just \$29. The name says it all: Associate your face and voice with your specific user account, and the software will prohibit all other beings from using your PC (please note that you have to provide the webcam and microphone necessary for the face and voice recognition).

During testing, *Face Lock* managed to keep all unauthorized editors from logging into a Windows ME machine. We even tried to fake out *Face Lock* by changing the sound of our voices and by using one editor's image and another's voice to spoof it, but *Face Lock* performed its sentry duties properly every

time; it could even tell when we took off our glasses. Unfortunately, the entire program is about as secure as a lock on a glass door. Why? Because *Face Lock* works only under the Windows 9X core, which has virtually no security (you can circumvent its security with a simple boot disk). The lack of Windows 2000 and XP support makes *Face Lock* worthless for securing a PC from all but 5-year-olds and senior citizens.

—GORDON MAH UNG



MAXIMUMPC VERDICT

U.ARE.U
DIGITAL PERSONA

+ AWESOME

It works exactly as promised—and what's promised is cool, inexpensive, and necessary.

- AWFUL

Shouldn't this thing wipe out typed passwords entirely?

877.378.2738 www.digitalpersona.com

\$69

9

MAXIMUMPC VERDICT

FACE LOCK
DATA BECKER

+ LAUDABLE

The utility has an uncanny ability to properly recognize faces and voices and keep intruders at bay.

- LAUGHABLE

Uh, the Win9X OSes are intrinsically insecure—and *Face Lock* doesn't offer Win2000/XP support.

781.453.2340 www.databecker.com

\$29

6

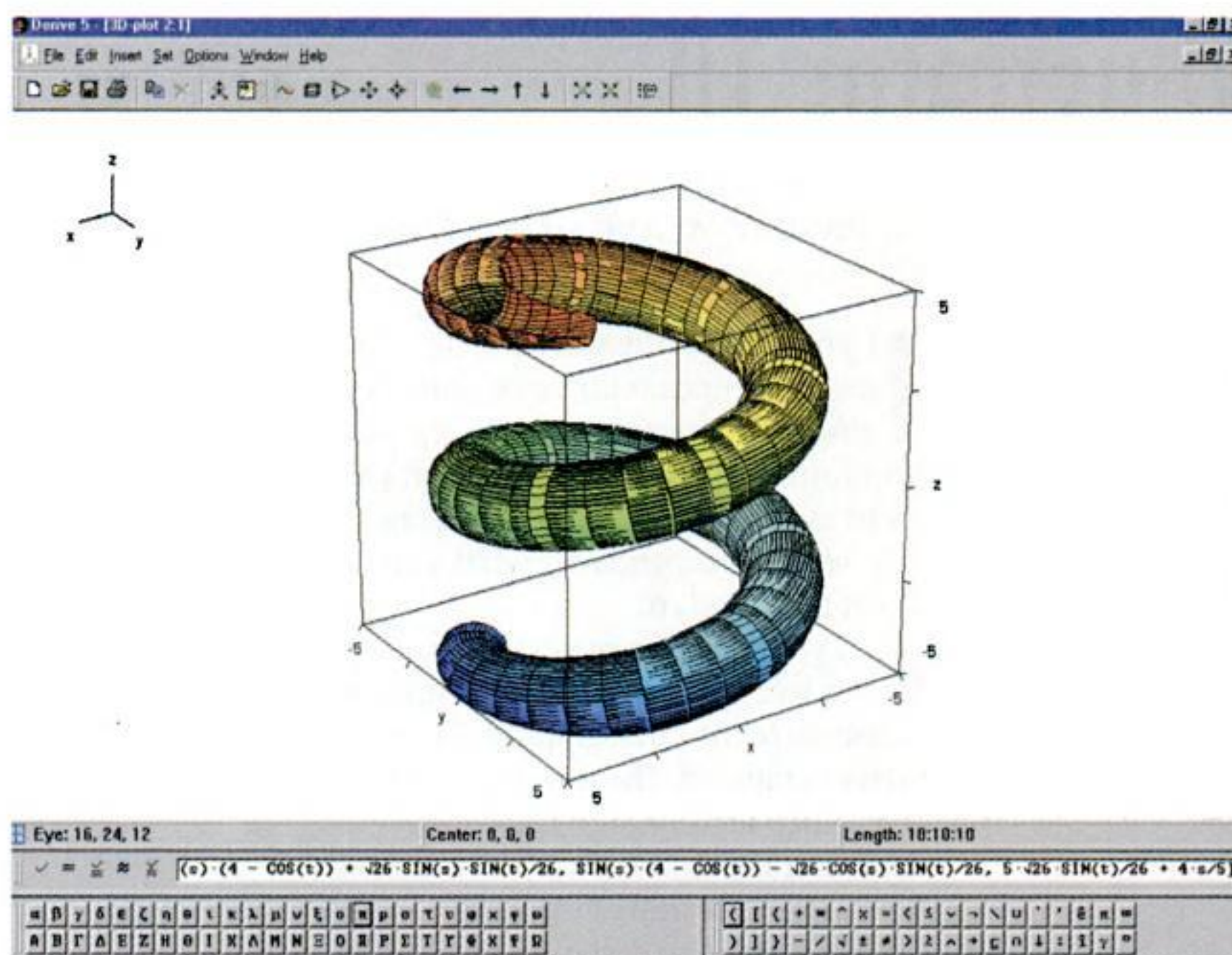
Derive 5

For people who think vector calculus is a self-indulgent, lazy-day diversion

There's nothing really "freaky" about *Derive 5*. Oh no, it's a perfectly sensible program—if you're one of those wacky savants who abhors long division and therefore resorts to converting all difficult math problems into logarithms inside your head, instead. If you're that kind of proto-geek, then you'll find *Derive 5* to be an excellent ally in advanced computations. Consider it a calculator cubed. Or as the Texas Instruments web site succinctly puts it, "It does for algebra, equations, trigonometry, vectors, matrices and calculus what the scientific calculator does for numbers."

The software provides the results of numeric operations to thousands of digits of precision—or rounded-off, if that's your preference. And not only does it apply the rules of advanced mathematics to problem-solving, it also furnishes a large library of utility files for abstruse mathematical tasks (such as computing elliptical integrals and solving first and second order ordinary differential equations). Simply click on an equation to highlight it, then copy and paste it in *Derive's* entry line, in a dialog box, or in the 2D or 3D plot windows.

Speaking of 3D plot windows, we were impressed by *Derive 5's* ability to create, store, rotate, and zoom a variety of shaded and patterned 3D surfaces in realtime, using either parametrically defined functions or sets of data points. It was easy to find point coordinates



The equation for a twisted helix in the 3D plot utility file looks complex, but the results look like hangable wall art.

with movable cross lines, and by using the Insert tool, we were able to quickly annotate surfaces with descriptive text and OLE objects.

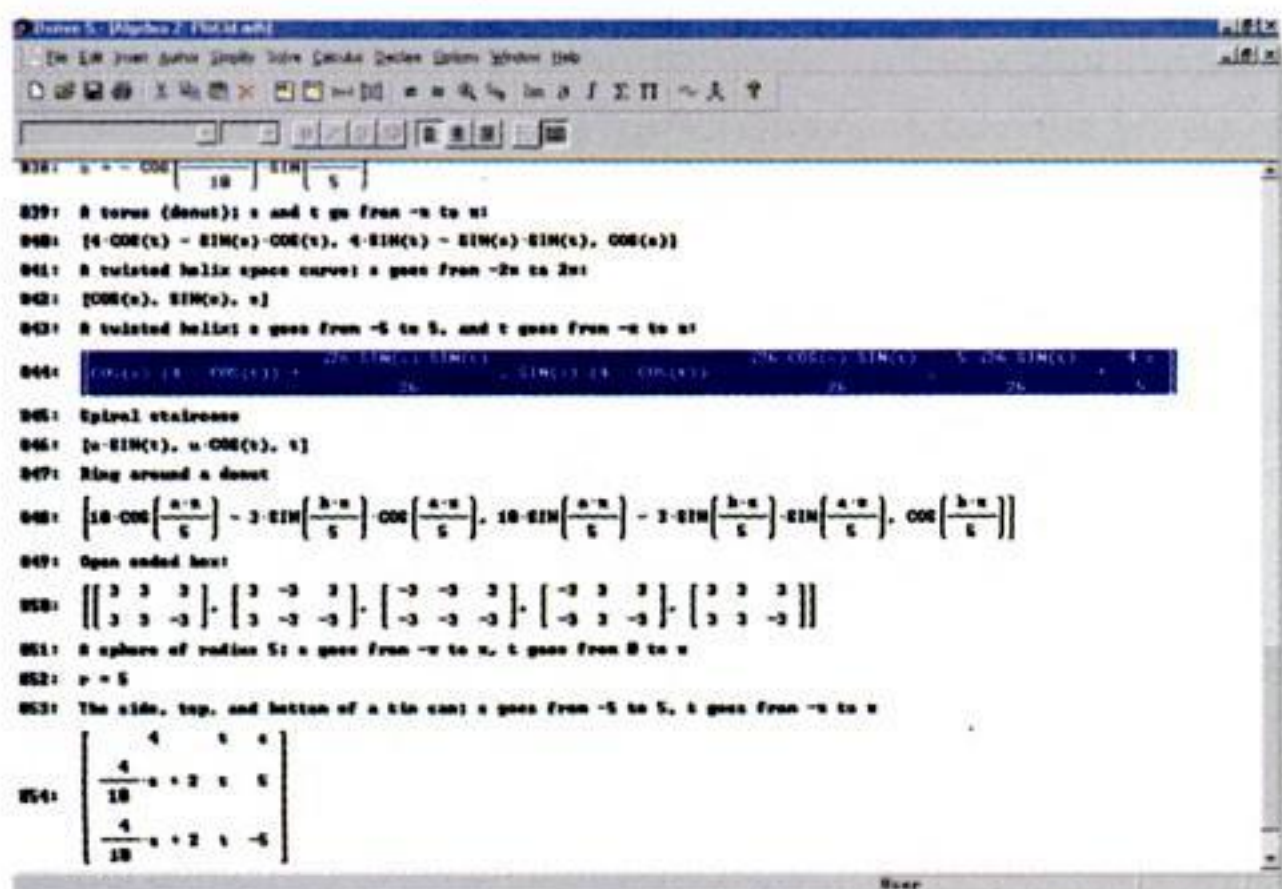
Images, text, and entire files can be exported in a variety of formats for use with other documents. In fact, the ability to create and save *Derive 5* worksheets makes the application a strong asset in tracking computations. We found it quite rewarding to build computations within the program, then paste them as needed into other, non-mathematical documenting tools such as *Word* and *Excel*—mainly because *Derive* provides a host of math symbols and Greek letters on a pair of dockable toolbars. In *Word*, you have to go through a tedious series of submenus to find the symbols you need, and even then, equations are difficult to properly format as part of continuous text. But importing the equations as graphical files into *Word* was a snap.

The *Derive* interface is simple to work with. Moving the mouse over a button on the button bar brings up a brief sentence describing the button function. There's extensive help available by pressing F1, with plenty of hotlinked entries, including explanations for the hundreds of functions, as well as examples within the utility files. Unfortunately, there's no context-sensitive help, which means if you have a question relating to, say, Pade rational approximations (and, really, who doesn't?), you can't just click on a portion of the appropriate utility file, hit

F1, and expect to see your answer.

Very occasionally, the otherwise excellent manual doesn't reflect the content of the software in its current state. For instance, page 55 of the tutorial introductory chapter refers to using the File>Open command and accessing *chapter02.dfw*. This file is not included with *Derive*, nor is it up at Texas Instruments' *Derive* web site. While this is a minor blot on a document of 260-plus pages, and doesn't justify a new printing, a simple errata sheet to clarify the text could have been enclosed with our boxed copy (and wouldn't you expect as much fastidiousness from a math software developer?). Regardless, *Derive 5* is an extremely powerful, easy-to-use tool for professionals, educators, and students in math-related fields. It's well-supported both by Texas Instruments and through third-party supplemental books. A complete list is available at <http://education.ti.com/global/otherbook.html#14>.

—BARRY BRENESAL



And this is the equation from which the twisted helix was born.

MAXIMUMPC
VERDICT

Derive
 TEXAS INSTRUMENTS

+ GOOD DAY SUNSHINE

Extremely powerful and easy to use—assuming you understand "math" in the first place.

- MEAN MISTER MUSTARD

No context-sensitive help, plus the manual's a bit inconsistent with the software.

800.842.2737 <http://education.ti.com>
\$90

9

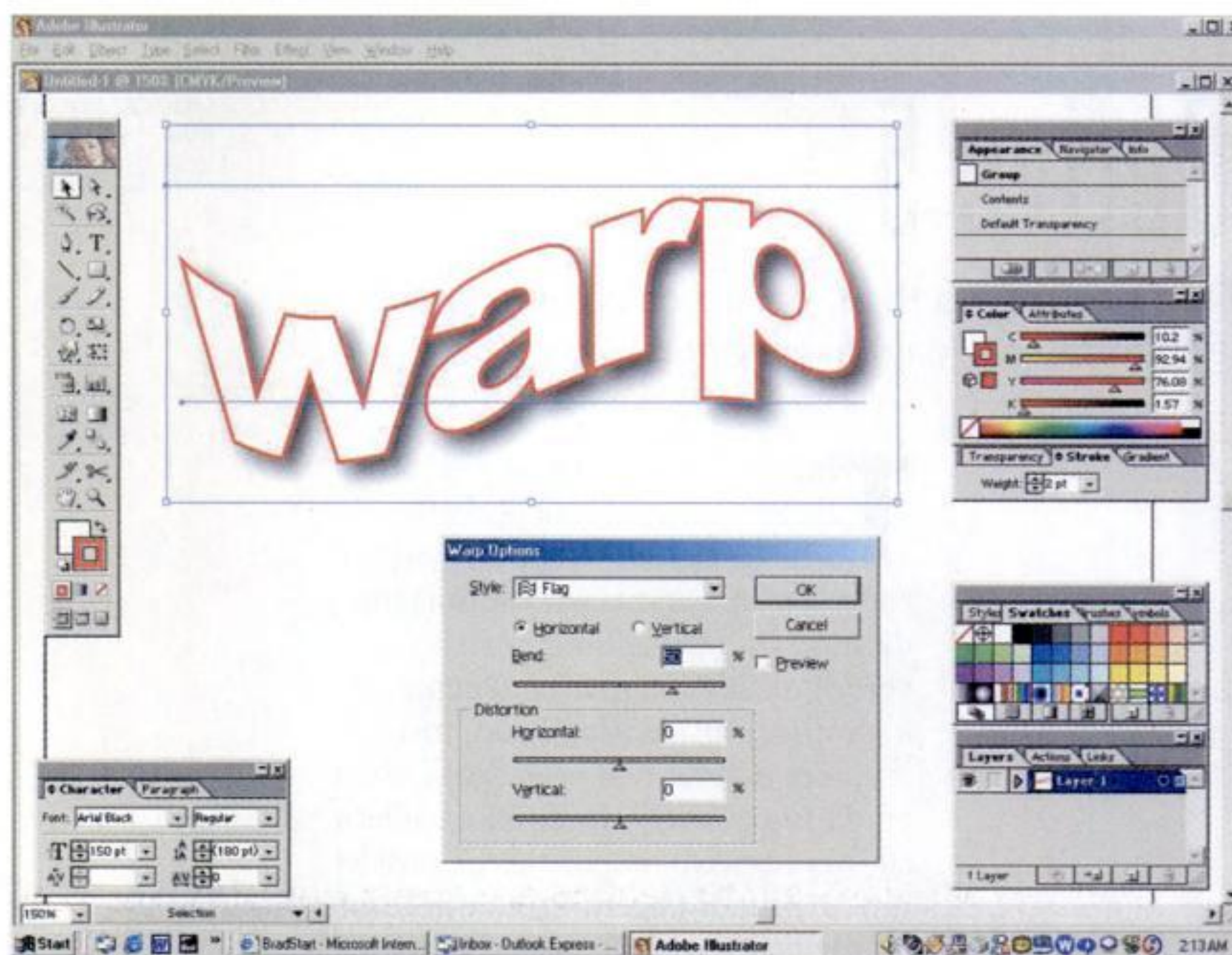
Illustrator 10

Adobe obviously knows how to make a great graphics app—but is it out of new ideas?

If you're a professional artist who uses a computer for your work, you absolutely must have some version of *Illustrator*. The real question at this point is, Is version 10 worth the upgrade? The answer depends on what you do with the program.

If you're a commercial artist who needs to create and update multiple versions of the same graphic, *Illustrator 10* is a godsend. The new Data-Driven Graphics feature allows designers to designate variable fields that can later draw from a shared database. This allows a group of designers to generate regional variations of a single ad layout, or product-specific versions of a promo, or really any kind of design document that demands small variations or continual content updates to a common layout. Variables can include either text strings or images, and a Visibility option even allows you to hide certain elements in specific designs.

Adobe obviously tried hard to make the Data-Driven Graphics process as painless as possible, but complete control can be a chore. While objects can be added to the database via drag-and-drop, that method isn't always efficient, especially when you're dealing



Among the new tools in Adobe's *Illustrator 10* is a set of user-definable deformations, such as the Warp command.

with larger databases. The other option is to create the database in XML (its native format), but this will likely require a programmer for larger projects. The scant six pages dedicated to the topic in the 400-plus page manual provides nowhere near enough info to truly tap the power of this promising new feature.

Adobe says its latest additions make *Illustrator 10* the quintessential tool for web designers—but don't delete Macromedia *Fireworks* just yet. The latest version of *Illustrator* adds sophisticated new slicing options for dealing with large web graphics. Slices are even recalculated after you make changes to your work. Nice. The Symbols palette, meanwhile, is supposed to help keep file sizes under control by scaling recurring elements instead of recreating them in each instance. Both of these features work conceptually, but there's an underlying problem in the essential fact that *Illustrator* is a vector-based app trying to make do on a raster-based web. Before your art can be added to the standard web page, you still need to rasterize it into an HTML-kosher format such as JPEG or GIF. On the plus side, Adobe has extended *Illustrator 10* to allow the export of SWF Flash animations from directly within the program. And perhaps *Illustrator 10*'s most useful web feature is its least heralded: The ability to selectively set anti-aliasing for type. Once you see how clear smaller point sizes reproduce when rasterized without anti-aliasing, you'll wonder why all applications don't offer this option.

Rounding out the changes is a

handful of new tools for distorting simple elements. Enveloping, Warping, and Liquifying allow you to bend your images, but, as you'll find with all canned effects, the threat of "cliché abuse" is high. Another quiet change that's actually very useful is the refined Pathfinder palette, which makes combining elements much easier. It's an excellent feature that just got better.

Unless you're the rare designer who honestly needs one of the specific tools mentioned above, you're better off spending the \$150 upgrade fee on plugins such as Elysium's *3D Tiger* or any of Virtual Mirror's offerings. So, if we were simply grading this version as a pure upgrade product, we'd give it a 6 verdict. But if you don't already own *Illustrator*—or haven't upgraded since revolutionary features like Brushes and Mesh fills were added—you should take the plunge. As a stand-alone product, version 10 deserves a Perfect 10 verdict. Whaddya say we compromise, give the application the benefit of the doubt, and award this update a very solid 9?

—BRAD DOSLAND

Vector vs. Raster

Even some experienced computer artists still don't get the distinction between vector-based apps such as *Illustrator* and raster-based apps such as Adobe's other stalwart, *Photoshop*. Here's the deal:

A vector-based graphic is made up of mathematically defined curves and designated fills. The shape, fill, stroke, and other properties of the graphic can be manually edited at any point. The fundamental component in any vector-based graphic is the Bezier curve, a line segment defined by handles extruded from the segment's two defining points. Because the graphic is strictly preserved as an aggregate of numerical formulas, the graphic (or any of its individual elements) can be scaled up or down with no loss in image accuracy.

A rasterized image is vastly different. This variety of graphic is made up of a fixed grid of colored squares (that is, pixels). The higher the image resolution, the more pixels that constitute the picture. A raster image can contain more subtle gradients and textures, such as those found in a photographic image, and the tools for editing a raster image tend to be much more intuitive than the tools used to tweak the handles of an elastic line segment. But a raster image can sometimes be more difficult to manage because individual elements aren't preserved (unless saved with layering data) and scaling degrades image quality.

MAXIMUMPC VERDICT

Illustrator 10
ADOBE

+ PICTURE PERFECT

Ten generations of refinement have produced the ultimate drawing app.

- BUTT UGLY

This latest generation ain't all that amazing as an upgrade proposition.

800.833.6687 www.adobe.com

\$400 (\$150 upgrade;
\$250 competitive upgrade)

9

Become a PC Repair Technician

Earn up to \$48,000 a year in an ever-growing field.*

Use your talent for solving your own PC problems to train for a career as a Computer Service Technician or a Technical Analyst. Work at a help desk for a large user community, work for a PC Repair Center, or open your own home repair shop. It's your choice! Consider this: Employment of PC Repair professionals is expected to increase by 36% through 2008 and you can earn as much as \$48,000 a year.*

Education Direct's PC Repair program shows you how to do upgrades, network installations, and more, all in the comfort of your own home. You can:

Learn Conveniently - All your lesson materials are delivered directly to your door. Avoid the hassle and expense of commuting. Learn in the privacy of your own space.

Prepare for A+® Certification - Use the complete A+® Certification Test Prep kit provided with your program to add this valuable credential to your resume.

Build a Prestigious Career - You'll have skills and credentials that employers and co-workers respect. Develop a reputation for success in a field that's filled with advancement opportunity.

Education Direct also offers you other career training programs in computers. Learn Programming or Internet Web Page Design, or get your degree in Applied Computer Science. Choose the direction of your career!

* Growth figures represent a ten-year period ending 2008. Source: *National Industry-Occupation Employment Matrix*, a publication of the U.S. Bureau of Labor Statistics. All salary information is based on the *Occupational Outlook Handbook*, a publication of the U.S. Department of Labor. Individual student earnings vary.

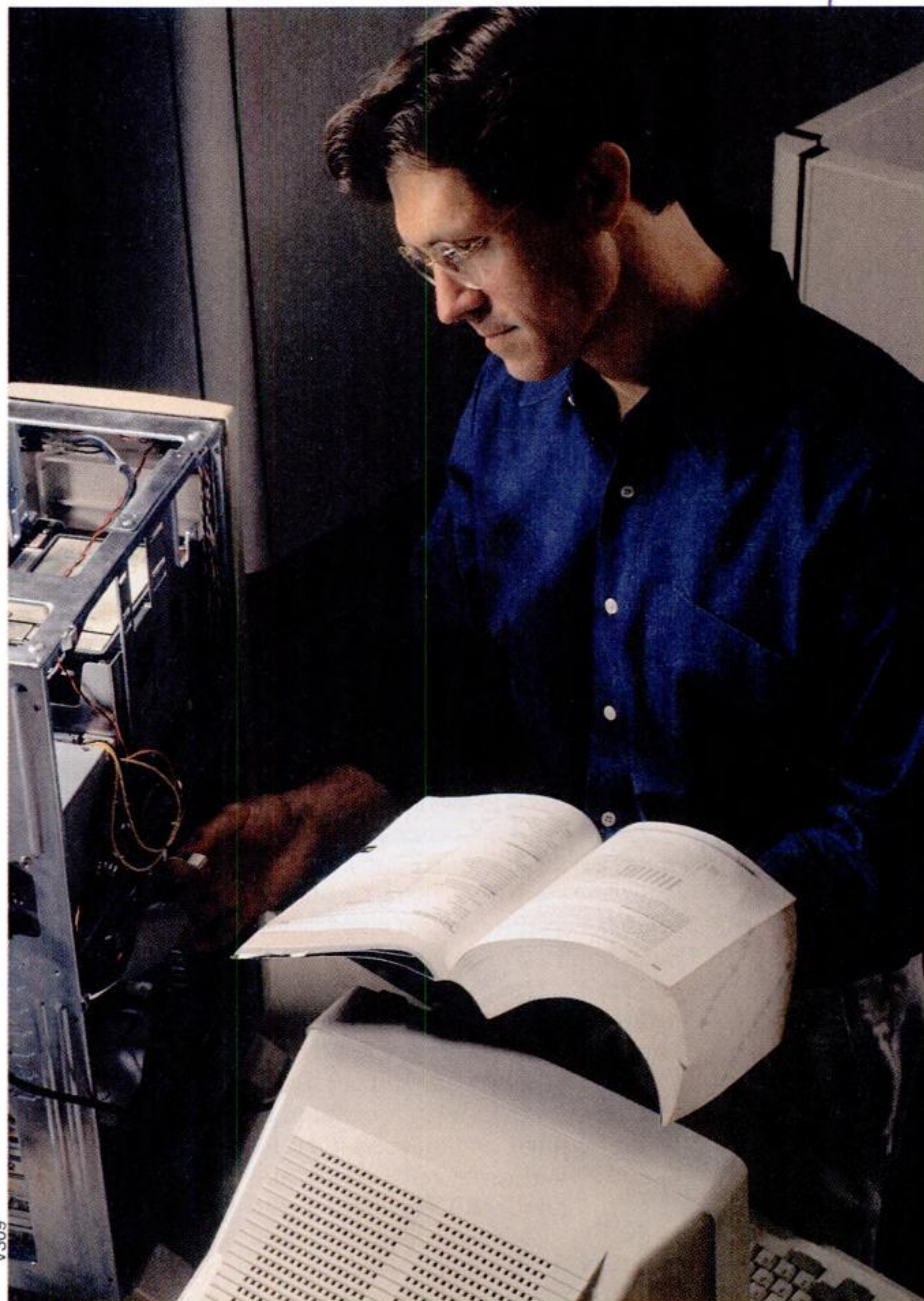
Here are three easy ways to get FREE information.
For fastest service call TOLL FREE

1-800-572-1607 ext. 1355

Visit **www.EduDirect-usa.com**

Online enter Web ID# PFYS22S

Or complete and return the postpaid card.
(If card is missing, please use the coupon below.)



Yes! Send me free information on how I can train at home for the computer career of my choice. I understand there is no obligation. **CHECK ONE BOX ONLY.**

☐ **027 PC REPAIR**

Other Computer Programs

- ☐ 038 PC Specialist
- ☐ 043 PC Fundamentals*
- ☐ 044 A+® Certification Test Prep.*
- ☐ 053 Desktop Publishing & Design
- ☐ 083 Web Page Designer

Computer Programming

- ☐ 001 Programming in BASIC
- ☐ 036 Visual C++®
- ☐ 069 COBOL*
- ☐ 082 Java®
- ☐ 037 Visual Basic®

Specialized Associate Degree Programs

- ☐ 064 Applied Computer Science
- ☐ 060 Business Management
- ☐ 065 Electrical Engineering Technology
- ☐ 062 Mechanical Engineering Technology

Career Diploma Programs

- ☐ 390 Bookkeeping
- ☐ 085 Drafting
- ☐ 054 AutoCAD®
- ☐ 006 Electrician
- ☐ 079 Electronics Technician
- ☐ 015 Home Inspector
- ☐ 008 Paralegal

*Certificate Programs

- ☐ 070 Small Business Management
- ☐ 387 Telecommunications Technician
- ☐ 087 TV/VCR Repair

High School Diploma

- ☐ 007 Thomson High School

THOMSON
★
EDUCATION DIRECT

Dept. PFYS22S
925 Oak Street
Scranton, PA 18515-0700

Name _____ Age _____
Street _____ Apt. # _____
City _____
State _____ Zip _____
Phone () _____
E-mail _____

Return to Castle Wolfenstein

Mix one part Nazi, one part stealth, one part mayhem. Stir and enjoy!

You'd be hard-pressed to find a more satisfying moment in single-player gaming: You've already taken out a rat's nest of Nazi goons, but now you have to make it across a few hundred yards of Jerry-infested wilderness—in broad daylight, without being detected. Killing the bastard in the watchtower is your most logical objective; if you can get him, the rest of your mission should be cake. So you flank him on the right, and keep to the trees. Finally, you reach the watchtower. Undetected but smack dab in the middle of a matrix of German guards, you begin climbing up the ladder, quiet as a church mouse. You reach the top. You aim your silenced gun. You hold your breath. You pull. *Ffft-ffft-ffft*.

And he's dead! Victory! Well, at least for now. None of the sauerbraten saw your brazen assassination, but you still have to find the experimental sniper rifle with the aluminum bullets and stealth your way to the next checkpoint.

Rejoice, fans of first-person adventuring, for *RTCW* is a deep, rich, and intensely satisfying romp through the banality of evil. Gameplay is standard single-player fare: You're a covert operative—B.J. Blazkowicz, Nazi player hater extraordinaire—and you earn your keep by assassinating bad guys, stealing bad guys' code books, and blowing up bad guys' toys in a preposterous mixture of wartime, supernatural, and quasi-sci-fi levels.

While the general gameplay language of *RTCW* is nothing revolutionary, the game's overall level design, weapons assortment, AI, modeling, animation, and texturing are nearly beyond reproach.

Beautifully detailed outdoor levels—replete with plenty of sniping perches and curious buildings to explore—do a remarkable job of communicating scale. Indeed, when you hit the Bramburg Dam,

"Can't we just put down our guns for a few moments, and get to know each other instead?"



Cleaning house: The Factory level offers some of the best search-and-destroy action in the game. Travel from burned-out room to burned-out room, and exterminate anything that's still alive. Just be careful of the tenacious troopers protecting the top floor.



The Burned Out Factory level's set design could have been lifted straight from *Saving Private Ryan* or *Band of Brothers*.

you feel like you're about to single-handedly wrestle control of a major municipal utility. To accomplish such a feat, you're armed with what must be about 400 pounds of weapons and ordnance. We particularly liked the German paratrooper rifle, which can be picked up from fallen Jerrys. With both semi-automatic action and a sniping scope, it's the perfect companion for cleaning out interior levels where different types of enemies attack you from both near and afar.

One of your most formidable foes is the catsuit-clad Elite Guard—a red-hot Gestaponatrix who likes to teach little American boys a lesson with the barrel of her silenced Sten machine gun. The Elite Guard's supermodel looks are eclipsed only by her frustrating ability to dodge your fire with cartwheels and similarly flamboyant acrobatics. Like all the characters in *RTCW*, the Elite Guard are brought to life with state-of-the-art skeletal animation and AI. Enemies can run for cover, change their strategy based on what weapon you're carrying, and sound alarms when they notice dead bodies. But nothing's more annoying than tossing a potato masher at a Jerry, then getting blown to bits when he tosses it back at you.

While your missions are almost entirely linear, they're certainly varied in structure—*RTCW* offers far more opportunities for stealth wet work than the typical first-person shooter. And when you're not in a level where secrecy is key, you

can still make your own decisions about how to, say, take out a 10-man hit squad. Mow them down with a 500-round clip of your Venom gun, or pick them off one by one with your scoped Mauser rifle. It's really your decision.

RTCW is certainly no *Half-Life* in the purity-of-vision department (c'mon—since when did the Nazis invest in supernatural and cyborg research?), and its zombie levels are just plain un-fun (when these ghouls fire their "phantom skulls" at you, your entire vision goes black, and you can't fire back—sort of like the old street-fighting trick where your opponent pulls your jacket over your head, then beats the crap out of you). But with hours of diverse single-player action, and bullet-proof team-oriented multiplayer, it's an extremely satisfying experience overall.

—JON PHILLIPS

MAXIMUMPC VERDICT

Return to Castle Wolfenstein
ACTIVISION/ID

+ YAH-YAH

Sumptuous environments, delightful weapons, and an addicting mixture of stealth and run-and-gun gameplay.

- P'TOOIE!

Zombie levels suck. Sci-fi and supernatural levels are incongruous with storyline, which just ain't *Half-Life*-caliber in the first place.

www.castlewolfenstein.com

\$50

9

Let the Games Begin!

Action by air, by sea, by horseback, or by the numbers

Comanche 4

The latest *Comanche* romp is far more arcade-like than all previous versions of the attack helicopter fest. You get six single-player campaigns, good for 30 individual missions. They're mostly of the "bad guys have taken over X, and you have to kill them" variety, and your fully loaded chopper is more than up to the task. Your arsenal



includes a nose-mounted cannon, direct-fire unguided Hydra rockets, air-to-air Stingers, and air-to-ground Hellfire missiles. The bad guys come on foot, on snowmobiles, in armed ground vehicles, and in enemy choppers, and all seem eager to get in front of your guns. The flight model is loose and easy to pick up, and there are three views to choose from, along with a "freelook" mode. The enemy AI is primitive and tends to rely on the force of numbers rather than cleverness. The game did have issues with Win2000—taking a frame rate hit in places—but you're warned of this during install.

OH, HELL YES!: Explosion graphics and sounds are well done.

HEAVY SIGH: Playing under Win2000 puts the "chop" in chopper. Trees don't explode when hit. The copter's size is indiscernible in first-person mode

—BILL MCCLENDON

MAXIMUMPC VERDICT: 7 \$40, Novalogic, www.novalogic.com, 877.405.6647

Silent Hunter II

In *Silent Hunter II*, you control a German U-boat in many different mission types, ranging from the relatively easy search and destruction of an Allied convoy to damn-near-impossible carrier attack missions, complete with Allied tin cans that ruthlessly seek you out. The level of realism is fully adjustable, from an almost arcade-like simple



mode to a mode that lets you control every aspect of your sub's activity. We were especially impressed with the level of detail found in the torpedo control—everything is configurable, including running speed, distance to arm, and the direction of the torp's turn. Via a future patch, you'll be able to go head-to-head against a friend who's playing *Destroyer Command*, an Allied destroyer sim. *SHII*'s weakness is wimpy graphics. Even at the full detail setting, you won't be able to stress your GeForce3 card.

GUT: Terrorize the civilian shipping lanes of the Atlantic, with as much or as little detail as you like.

BEDAUERLICH: Weak graphics, and no multiplayer out of the box.

—WILL SMITH

MAXIMUMPC VERDICT: 8 \$40, Ubisoft, www.silenthunterii.com, 415.547.4000

Dark Age of Camelot

The latest entrant to the "massively multiplayer online role-playing game" scene is *Dark Age of Camelot*. Like other MMORPGs, *DAOC* is a persistent world, filled with thousands of other players. But what sets *DAOC* apart is a very advanced player-vs.-player (PVP) combat system—*DAOC* lets you fight other players for control of



the realm instead of banning PVP combat entirely or allowing players to fight willy-nilly. The *DAOC* universe is divided into three different realms and each is populated with different classes of players. As with most MMORPGs, the fun starts once your character matures, and the high-end game consists mostly of inter-realm PVP battles for realm artifacts. These artifacts give stat bonuses to everyone within a realm and must be defended from attacks by the other realms. There are still some niggling balance issues with realm-vs.-realm combat, and we find the basic user interface a bit confusing.

BOO-YAA: Finally—compelling reasons to kill your fellow gamers.

BLAH: The *DAOC* launch didn't suffer the traditional MMORPG "server issues," but we think realm balance and UI should have been refined first.

—WILL SMITH

MAXIMUMPC VERDICT: 8 \$40, www.darkageofcamelot.com, 703.934.0169

Codename: Outbreak

The plot from the new futuristic shooter *Codename: Outbreak* is a rip-off of every bad sci-fi movie ever made. This could be forgiven if the game wasn't such a pale wannabe of a tactical FPS. You're given freedom to vary gameplay—such as control over teammates and weapons and whether you want to enact a day or night



strike—but none of this works very well. Your teammates' AI is so bad, the poor bastards usually can't even negotiate turns. The game's weapons are indistinguishable at times, which makes some sense considering there's a single polygonal model shared by all the weapons! Although some aspects of the graphics are well-implemented—we like all the models that describe the environments—character models are excessively blocky, and the game suffers serious clipping issues. Some elements of *Codename: Outbreak* show promise, but the game simply doesn't offer rewarding gameplay.

BRAVO: General level design is creative, and the game costs just \$20.

BLECH: The AI sucks, the story is cliché, the graphics are uneven, and the gameplay is filled with boring puzzles and unsatisfying missions.

—JOHN TUMMINARO

MAXIMUMPC VERDICT: 4 \$20, www.venom3d.com

We are the largest source for black components We stock thousands of Computer Products

NEOWAVE Platinum PC Audio Graphic Equalizer



\$115
FM Tuner & Remote Included

RioVolt (SP90)

\$95

Play MP3 CD's
Fit over 20 hours
of audio on one
CD. 20 seconds
shock protection



AIPTEK PenCam

\$69

(USB, 8MB, up to 107 images, timer, 24bit)



Sales Line: 800-400-3499

IDE Hard Drives

MAXTOR

10GB	5400rpm	2B010H1	\$75
20GB	5400rpm	2B020H1	\$84
20GB	7200rpm	6L020J1	★\$85
40GB	5400rpm	4K040H2	\$81
40GB	7200rpm	6L040J2	\$105
60GB	5400rpm	4K060H3	\$115
60GB	7200rpm	6L060J3	\$137
80GB	5400rpm	4D080H4	\$166
80GB	7200rpm	6L080J4	\$187
120GB	5400rpm	4G120J6	\$245
160GB	5400rpm	4G160J8	★\$298

SEAGATE

20GB	5400rpm	ST320410A	\$82
20GB	7200rpm	ST320011A	\$86
40GB	5400rpm	ST340810A	\$92
40GB	7200rpm	ST340016A	\$105
60GB	5400rpm	ST360020A	★\$115
60GB	7200rpm	ST360021A	\$142
80GB	5400rpm	ST380020A	\$160
80GB	7200rpm	ST380021A	\$182

IBM

40GB	7200rpm	07N6654	\$111
60GB	7200rpm	07N6655	★\$144

Western Digital

20GB	7200rpm	WD200BB	\$87
30GB	7200rpm	WD300BB	\$98
40GB	7200rpm	WD400BB	\$109
60GB	7200rpm	WD600BB	★\$142
80GB	7200rpm	WD800BB	\$189
100GB	7200rpm	WD1000BB	\$225

2.5" IDE for Laptops

10GB	IBM	9.5mm	07N4390	\$95
10GB	Toshiba	9.5mm	HDD2151	\$104
15GB	Fujitsu	9.5mm	MHN2150AT	\$121
20GB	Hitachi	9.5mm	DK23CA20	\$135
20GB	IBM	9.5mm	07N6713	\$135
20GB	Toshiba	9.5mm	HDD2164	\$137
30GB	Toshiba	9.5mm	HDD2159	\$202
30GB	Hitachi	9.5mm	DK23CA30	\$196
30GB	IBM	9.5mm	07N6714	\$199

2.5" to 3.5" Converter Bracket \$15

CDRW/DVD Drives

CDRW Drives

Beige Black

12x10x32	IDE	Plextor PX-W1210TA/SW	\$130	\$170
16x10x40	IDE	Lite-On LITE1610	\$85	\$125
16x10x40	IDE	Pacific Digital U-30105	★\$90	\$130
16x10x40	IDE	Sony CRX1611/82U	\$123	\$163
16x10x40	IDE	Plextor PXW1610TA	\$138	\$178
20x10x40	IDE	Acer 2010A	\$105	\$145
20x10x40	IDE	Yamaha CRW2200EZ	\$187	\$227
24x10x40	IDE	Lite-On LITE2410	★\$92	\$132
24x10x40	IDE	Acer 2410A	\$122	\$162
24x10x40	IDE	Teac CDW524E/KIT	\$130	\$170
24x10x40	IDE	Pacific Digital U-30106	\$115	\$155
24x10x40	IDE	Sony CRX175A/A1	\$163	\$203
24x10x40	IDE	TDK VeloCD	\$148	N/A
24x10x40	IDE	Plextor PXW2410TA/SW	\$175	\$215
24x10x40	IDE	Yamaha CRW3200EZ	\$189	\$229
32x10x40	IDE	Pacific Digital Mach 32	★\$144	\$184
12x10x32	SCSI	Plextor PXW1210TS/SW	\$225	\$265
20x10x40	SCSI	Yamaha CRW2200SZ	\$279	\$319

DVD Drives

16x/40x	IDE	BTC DVD BDV316B	\$63	\$88
16x/48x	IDE	Toshiba SDM1612TA	★\$75	\$100
16x/40x	IDE	Pioneer DVD Tray DVD500M	\$75	\$100
16x/40x	IDE	Pioneer DVD Slot DVD106	\$75	\$100
16x/40x	IDE	Acer DVD1648A	\$80	\$105
10x/40x	SCSI	Pioneer DVD305S	\$104	\$129

CD-ROM Drives

52x	IDE	Lite-On LTN525	\$38	\$63
52x	IDE	Creative Labs BLASTER52X	\$35	\$60
52x	IDE	Sony CDU5211	\$40	\$65
56x	IDE	BTC G621D	★\$34	\$59

SCSI Hard Drives

External add \$99 SCA versions also available.

MAXTOR (Formerly Quantum)

9.1GB	7200rpm	XC009L2	4mb	\$151
18.4GB	7200rpm	XC018L4	4mb	★\$174
18.4GB	10,000rpm	KW018L2	8mb	\$206
36.7GB	7,200rpm	XC036L8	4mb	\$321
36.7GB	10,000rpm	KW036L4	8mb	\$390
73.4GB	10,000rpm	KW073L8	8mb	\$763

SEAGATE

18.4GB	7200rpm	ST318417W	2mb	\$179
18.4GB	7200rpm	ST318437LW	2mb	\$164
18.4GB	10,000rpm	ST318406LW	4mb	\$216
36.7GB	7,200rpm	ST336737LW	2mb	\$288
36.7GB	10,000rpm	ST336706LW	4mb	\$400
181.6GB	7200rpm	ST1181677LW	4mb	\$1418

IBM

9.1GB	10,000rpm	07N3220	4mb	★\$182
18.3GB	10,000rpm	07N3210	4mb	\$212
36.7GB	10,000rpm	07N3200	4mb	\$400

Motherboards

SOCKET A Call for a great deals on a processors!!

ABIT	KG7	\$130	KR7A	\$139
	KG7RAID	\$149	KR7ARAID	\$174
ASUS	A7V266	\$141	A7A266	\$125
	A7V266E	\$169	A7N266	★\$209
IWILL	KA266-R	\$102	KK266-R	\$106
	KD266	\$81	KK266PLUS-R	\$117
FIC	AD11	\$105	AZ11EA	\$79
Gigabyte	GA7DXR	\$150	GA7VTXE	\$105
MSI	K7T266PRO2	\$119	KT7266PRO2RU	\$139
Tyan	S2462UNG	\$469	S2460	\$215

SOCKET 370 (Flip Chip/Celeron)

IWILL	DVD266	\$139	DVD266-R	\$160
Tyan	S2505DNGR	\$239		

SOCKET 423/478 (Pentium 4)

ABIT	BW7	423	\$126	BL7RAID	478	\$150
	BW7RAID	423	\$145			
ASUS	P4TE	478	\$170			
	P4TEW	478	\$176			
Gigabyte	GA8ITX	478	\$165	GA8ITX-R	478	\$195
INTEL	D850MV	478	\$159	D845WNL	478	\$145
	D845PT	478	\$135	D845PTL	478	\$145
Tyan	S2090	478	\$115	S2266	478	\$99
MSI	645ULTRA	478	\$108	850PRO5	478	\$144

Black Components

MONITORS

Viewsonic	17"	E70FB	1280 x 1024 - .21	\$190
Viewsonic	17"	G70MB	1280 x 1024 - .23	\$215
Viewsonic	19"	E90FB	1600 x 1200 - .21	\$279
Viewsonic	19"	G90MB	1600 x 1200 - .22	\$340
Viewsonic	15"	VE150MB	1024 x 768 LCD Flat	\$439
Viewsonic	17"	VE170MB	1280 x 1024 LCD Flat	\$810

Removable Drives

Mitsumi	1.44mb Floppy	\$17
Teac or Sony	1.44mb Floppy	\$21
LS120	120mb Removable Media Drive	\$85
Iomega	100/250MB Zip IDE	\$79/\$109

SPEAKERS

Creative Labs				
CSW1500	4 point surround	53W	\$123	
INSPIRE5300	6 Piece Desk Theatre 5.1	48W	\$86	
PS2000	2 Pc Playwork Digital	22W	\$168	
DTT2500	6 Pc Desk Theatre Dolby	42W	\$205	
Sonigistix	Monsoon Flat Panel Speakers			
MH505	3 Piece	51W	\$132	
MM1000	3 Piece	50W	\$150	
MM2000	5 Piece	340W	\$220	

HardDrive.com is the LARGEST source for Black Components! Don't see it in our ad? Give us a call we'll find it for you!

Microsoft Wireless Optical Intellimouse Explorer



Wireless Freedom
IntelliEye Technology
5 Custom Buttons
USB Connector
PC or Mac

\$65

EVGA GeForce3
64MB DDR AGP 4X
with TV/S-Video Out



Titanium TI 200
with 350RAMDAC
TV/S-Video Out
064-A4-NV40-S1

\$298

HP Jornada
Pocket PC's
HP564



133MHz
Keep up with
meetings, appointments,
projects, deadlines,
on the go! View Word,
Explorer, Outlook
in vibrant colors!

\$509

Motorola
Talkabout
T900 Wireless



Quick
easy and
convenient
wireless
access to
email!

\$219

Asus
A7V266E
Socket A
With RAID



KT266A
Chipset with
DDR, 6 Ch
audio
3GB SDRAM
Overclockers
Dream!

\$175

Ultimate Wish List

Ultimate Wish List

Microsoft Windows XP
Home Edition

OEM Home Edition
Must be sold with a
Hard drive or CPU



\$99

AMD Athlon
XP 1900+
Processor



Athlon XP Desktop
1900+ Processor
1.6GHz
Socket A with
QuantiSpeed
Architecture

\$269

Creative Labs
Sound Blaster
Audigy PlatinumEX



A professional
Home Studio
with high-end
music creation
& editing tools

Pacific Digital
Internal 16x10x40
CD ReWritable Drive



Burn your favor-
ite music
video or data to
CD faster &
cheaper than
ever!

\$99

24x Media
30 pack - \$21

Hydraulic Case
w/Window



300 Watt
Mid ATX
Hydraulic
Case with
Window
Kit

\$159

We can install any window
into a case you buy from us
for a \$45 labor fee.

Klipsch ProMedia

ProMedia 5.1

\$399

ProMedia 4.2

\$359

ProMedia 4.1

\$299

ProMedia 2.1

\$179



"In a word INCREDIBLE" -IGN.com

PC Mods

Water Cooling Kits



Intel Socket 7, PPGA, P4, all and any zif socket systems.
AMD All AMD socket zif style CPUs socket "A" or older K6
Radiator 5x5" finned surface area
Sunon 120mm Fan (Low Noise)
Plastic Tubing (1/2" wall ID 3/8" 1/2" OD)
Copper Heat Exchanger (Aluminum 3/8 fittings)
Safety Shim, 6 Hose clamps, Arctic Silver
Anodized reservoir (4.5" DIA 2.75" height)
145GPH pump (3/8" fittings)
Detailed installation instructions

PUFX Complete Water Cooling Kit \$199

Fans & Grills

Fan Grills

Radiation	80mm	\$17
	92mm	\$19
	120mm	\$22

Case Fans

Sunon	60mm	\$9
Sunon	80mm	\$13
Sunon	92mm	\$17
Sunon	120mm	\$21

CPU Fans

Biohazard	80mm	\$18
	92mm	\$20
	120mm	\$24

Thermaltake	80mm	\$17
	92mm	\$19
	120mm	\$22

Swirl	80mm	\$19
	92mm	\$22
	120mm	\$25

Standard Grills

ThorTek	80mm	\$13
ThorTek	92mm	\$17
ThorTek	120mm	\$21



Thermaltake Active Memory Cooling Kit Recommended for the PC-2100 & PC-100/133 SDRAM PCB Dimension

\$19

Arctic Silver II	99.8% pure micronized silver compound	\$7
------------------	---------------------------------------	-----

Thermaltake	Crystal Orb VGA Card Chip Cooler	\$19
-------------	----------------------------------	------

Window Kits



All HardDrive.com Window Kits arrive covered in paper (as shown) free from scratches, in perfect condition. Our windows are 100% acrylic, laser pre-cut, with molding and locking strip included.

Rectangle Window Kit	\$35
Round Window Kit	\$35
Oval Window Kit	\$35
L-Shaped Server Window Kit	\$40

Window Etchings



Bio-Hazard Etched Applique	\$12
Atomic Etched Applique	\$8
Radio Active Etched Applique	\$8

Neons

10" Neon Accent	\$24
Blue, Green, Red, Black	
15" Neon Accent	\$35
Blue, Green, Red, Black	
25" Lava Neon Accent	\$45
Blue, Green	
Neon Glow Wire	\$39
White, Red	

XDREAM-MACHINES



XDream Machines® **NIGHTMARE³**
The ULTIMATE in High Performance Gaming

Processor	AMD® Athlon® XP 1900+ (1.60GHz) 266MHz FSB	Removable Storage	Black Sony® 1.44MB Floppy
Motherboard	ASUS® A7V266 "VA" VT8233 Chipset "Socket A" AGP Pro, ATA100, 5pci	Sound Adapter	Creative Labs® "Soundblaster" Audigy® XGamer
Case	Black Mini-Cube ATX 6-5.25", 10-3.5" Bays	Speakers	Cambridge SoundWorks® Desktop Theater 5.1 Dolby Digital (sub, 5 speakers, zremote)
Power Supply	ATX Form Factor 300 Watt	Network Adapter	3Com® Fast Ethernet 10/100
Cooling System	"Nightmare-Cube" Class Cooling System with Additional 120mm Fan	Game Controller	Microsoft® Sidewinder® Force Feedback 2 USB Joystick
Memory	256MB Samsung® PC-2100 DDR SDRAM	Keyboard	Belkin® Black "Ergoboard" 108-Key PS/2
Video Adapter	Nvidia® GeForce3 Ti 500 64MB DDR DVI-4xAGP	Mouse	Microsoft® IntelliMouse® Explorer Optical USB/PS2 5 Buttons with Scroll
Hard Disk Drive	IBW® 60GB "Deskstar" 60GXP 7200RPM ATA100	Monitor	NEC® Multisync FE700+BK Black 17" 25mm dpi
DVD-ROM Drive	Black Pioneer® 16x/40x EIDE Slot Load	Operating System	Microsoft® Windows® XP "Home Edition" OEM

AMD Athlon XP 1900+ Based Nightmare3

Advanced Gaming System **\$2,560.00**

XDream MachineCare® Warranty "MachineCare" Premium 1 Full Year Coverage on Parts and Labor. FREE UPS® Ground Service Shipping if ordered before 12/31/01.

GOT GAME?

Cases

ATX PC Cases

Nikao MT2000 300 Watt Silver/Black \$109	Lian-Li PC62 300Watt All Aluminum \$202	Ultimate Black Case w/Side Fan 300watt \$99
ThorTek Black Aluminum P4 300watt \$149	ThorTek SuperMid P4 Black 320watt \$119	ThorTek Silver Aluminum P4/AMD 300watt \$179

ATX Server Cases

Antec SX1240 Full Tower 400watt \$189	Antec SX1040B Performance 400watt \$149	Lian-Li PC70 Full Tower P4 Ready \$349
---	---	--

Drive Cases

ThorTek	5.25" Firewire CD Drive Case	\$159
ThorTek	5.25" Firewire Hard Drive Case	\$159
ThorTek	3.5" Firewire Hard Drive Case	\$95
ThorTek	3.5" USB 2.0 Hard Drive Case	\$89
ThorTek	2.5" USB 2.0 Notebook HD Case	\$85
ThorTek	2.5" Firewire & USB Combo Case	\$109

Firewire Drives

Firewire Hard Drives

Buslink	20GB	Desktop Firewire Drive	\$185
Buslink	40GB	Desktop Firewire Drive	\$193
Buslink	60GB	Desktop Firewire Drive	\$239
Maxtor	40GB	External 5400rpm Retail	\$189
Maxtor	60GB	External 7200rpm Retail	\$277
Maxtor	80GB	External 5400rpm Retail	\$277
QPS	10GB	Quadslim Portable Retail	\$192
QPS	20GB	Quadslim Portable Retail	\$238
QPS	60GB	Ultraslim 7200rpm Retail	\$285
QPS	80GB	Ultraslim 7200rpm Retail	\$334
QPS	100GB	Ultraslim 7200rpm Retail	\$410
WD	60GB	External 5400rpm Retail	\$265

Firewire CDRW Drives

TDK	VeloCD 24x10x40 Firewire	\$272
Yamaha	20x10x40 CRw2200FXZ Firewire	\$306

Firewire DVD Drives

Addonics	8X DVD/24X DVD8X24FW	\$294
----------	----------------------	-------

USB Drives

USB Hard Drives

Buslink	20GB	Desktop USB Hard Drive	\$159
Buslink	40GB	Desktop USB Hard Drive	\$176
Maxtor	40GB	5400rpm USB Hard Drive	\$186

USB Removable Drives

lomega	100MB	Zip Ext USB Drive 31197	\$97
lomega	250MB	Zip Ext USB Drive 31310	\$143
lomega	Peerless	USB Drive w/10GB 31772	\$316

USB CDRW Drives

Pacific Digital	16x10x40	USB 2.0 CD-RW	\$205
Plextor	8x8x24	USB 2.0 CD-RW	\$257
Sony	24x10x40	USB 2.0 CD-RW	\$280

Processors

AMD

AthlonXP	Desktop 1700	Retail AXP1700BOX	\$179
AthlonXP	Desktop 1800	Retail AXP1800BOX	\$245
AthlonXP	Desktop 1900	Retail AXP1900BOX	\$299

Intel

P4 478	1.7GHz	Retail BX80531NK170G	\$220
P4 478	1.8GHz	Retail BX80531NK180G	\$260
P4 478	1.9GHz	Retail BX80531NK190G	\$315
P4 478	2GHz	Retail BX80531NK200G	\$455

Sales Line: 800-400-3499
www.HardDrive.com

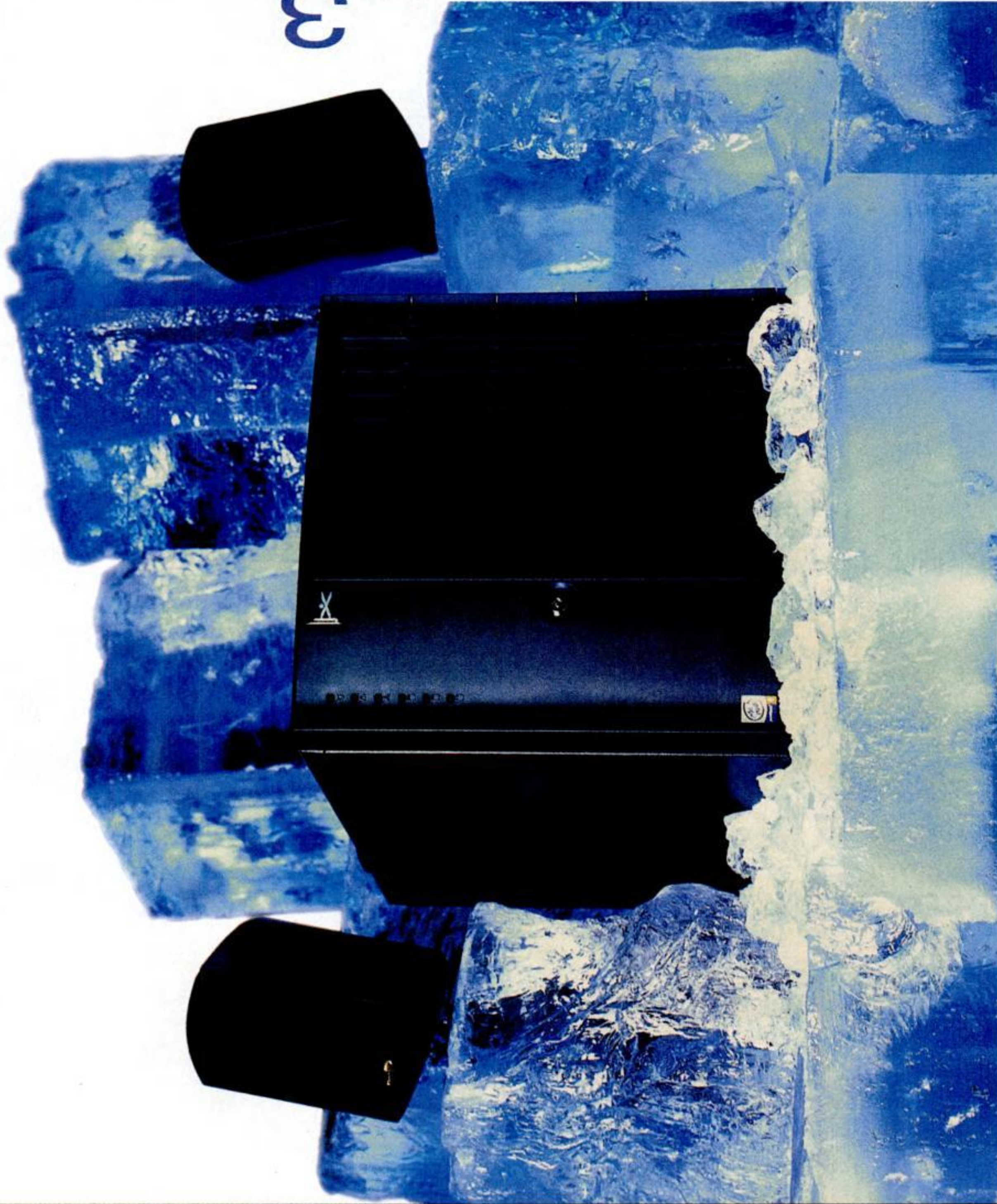
ThorTek Corp. 2800a West Main St League City, Texas 77573 Lifetime FREE technical support.

Prices are subject to change without notice. Shipping charges are non refundable. Returns may be subject to restocking fee. Products are covered by manufacturers warranty only. We accept all Government PO's. Local calls 281.557.8336 Fax 281.557.1420

XDREAM MACHINES

The Most Advanced Cooling Designs Available

*Ice Not Included



the Vitals:

- AMD® Athlon® XP 1900+ (1.60GHz) Processor
- ASUS® A7V266-E VIA® KT266A Motherboard
- Thermaltake® Dragon Orb Active CPU Cooler
- Black® 'Mini-Cube' Case with 300 Watt PS
- Advanced Cooling with Dual 80mm, Single 90mm and Single 120mm "High Flo" Exhaust Fan with External Laser-Cut Grill
- 512MB Samsung® PC-2100 DDR SDRAM
- 100GB Western Digital® 8MB Cache 7200RPM Ultra ATA100 Hard Drive
- NVidia® GeForce3™ Ti-500 nFinite-FX™ GPU 64MB DDR Video Adapter
- Black® Plextor® 24x/10x/40x EIDE CDR/CDRW
- Black® Pioneer® 16x/40x EIDE DVD-ROM
- Black® Mitsumi® 1.44MB Floppy Drive
- Creative Labs® Sound Blaster Audigy™ XGamer Sound Adapter
- Klipsch® ProMedia™ 5.1 THX Certified 500 Watt Speaker System with Subwoofer
- Microsoft® IntelliMouse® Explorer Optical
- Belkin® Black® ErgoBoard™ 108-Key Keyboard
- 3Com® 10/100Mbps PCI Network Card
- Microsoft® Windows® XP 'Home Edition'
- Custom Disaster Recovery Image CD
- Custom XDream Machines® Documentation Binder and CD Case
- 'MachineCare' Premium 1 Full Year Warranty on Parts and Labor
- One Full Year of Toll Free Phone Support

\$2595.00

(Prices subject to change. Please check our website for current price quotes.)
Add Black 17" Flat Screen NEC® .25mm dp monitor for \$270.25
Add Black 19" Flat Screen NEC® .25mm dp monitor for \$448.50

GAMING GOD'S WARNING: Prolonged use of XDream Machines® ultra-high performance gaming computers may result in excessive and uncontrollable excitement. These systems contain enough firepower to catapult your gaming experience to the next level, proven to cause dizziness and lack of sleep. Persons with high blood pressure or history of heart problems attempting to play their favorite PC games on XDream Machines® gaming systems should exercise extreme caution. Play at your own risk!

Financing Now Available! Call our Sales Department for Details!

Call Toll Free
1-877-MACHINES
1-877-622-4469

Computer enthusiasts serving Computer enthusiasts

CPUs

AMD

ATHLON XP

Athlon XP 1900+	\$149.00
Athlon XP 1800+	\$119.00
Athlon XP 1700+	\$99.00
Athlon XP 1600+	\$89.00
Athlon XP 1500+	\$79.00

ATHLON SOCKET A

Athlon 1.4 Ghz	\$115.00
Athlon 1.33 Ghz	\$99.00
Athlon 1.3 Ghz	\$99.00
Athlon 1.2 Ghz	\$89.00
Athlon 1.0 Ghz	\$69.00
Athlon 900Mhz	\$67.00

AMD DURON

Duron 1.1Ghz	\$64.00
Duron 1.0 Ghz	\$59.00
Duron 950Mhz	\$46.00
Duron 900Mhz	\$44.00
Duron 850Mhz	\$39.00

INTEL

PENTIUM 4

2.0Ghz Retail Box	\$479.00
1.8Ghz Retail Box	\$239.00
1.7Ghz Retail Box	\$189.00

PENTIUM III FLIP CHIP

P-III 1.13 Ghz	\$167.00
P-III 1 Ghz	\$139.00
P-III 933Mhz	\$134.00
P-III 866Mhz	\$126.00
P-III 850Mhz	\$119.00
P-III 800Mhz	\$99.00

CELERON

Celeron 1.1Ghz	\$99.00
Celeron 1.0Ghz	\$74.00

Buy a fan w/ any cpu
for a 1year warranty!

MEMORY

LIFETIME WARRANTY

168 PIN SDRAM

128MB PC100	\$19.00
256MB PC100	\$33.00
128MB PC133	\$24.00
256MB PC133	\$39.00
512MB PC133	\$75.00

RAMBUS

128MB 800Mhz	\$47.00
256MB 800Mhz	\$99.00

DDR

128MB PC 2100	\$31.00
256MB PC 2100	\$64.00
512MB PC 2100	\$134.00

VIDEO CARDS

EVGA

E-VANTA 8MB AGP	\$26.00
TNT M64 32MB AGP	\$39.00

GEFORCE2

MX200 32MB AGP	\$54.00
MX400 64MB AGP	\$79.00
ULTRA 64MB AGP	\$233.00
GEFORCE2 64MB	\$334.00

ATI

All in 1 128 32mbAGP	\$123.00
Radeon 32mb AGP	\$67.00
Radeon 32mb PCI	\$116.00
Radeon 64mb AGP	\$163.00
Radeon 7500 64MB	\$149.00
Radeon 8500 64MB	\$210.00

MATROX

G450/32DualheadDDR	\$97.00
--------------------	---------

CD ROMS

48X Mitsumi IDE	\$34.00
52X IDE	\$33.00
56X IDE	\$36.00
52X CREATIVE	\$37.00

HARD DRIVES

MAXTOR

20GB 66/5400/2mb	\$76.00
20GB100/7200/2mb	\$84.00
30GB 100/7200/2mb	\$94.00
40GB 100/7200/2mb	\$98.00
61GB 100/5400/2mb	\$105.00
61GB 100/7200/2mb	\$129.00
81GB 100/5400/2mb	\$156.00
81GB 100/7200/2mb	\$174.00

WESTERN DIGITAL

20.0GB 100/5400/2mb	\$74.00
20.0GB 100/7200/2mb	\$79.00
30.0GB 100/5400/2mb	\$89.00
30.0GB 100/7200/2mb	\$97.00
40.0GB 100/7200/2mb	\$102.00
60.0GB 100/5400/2mb	\$112.00
60.0GB 100/7200/2mb	\$139.00
80.0GB 100/7200/2mb	\$176.00
100.0GB 100/7200/2mb	\$214.00

CD RW's

8/8/32 Toshiba w/DVD	\$149.00
16/10/32 TEAC	\$114.00
16/10/40 Yamaha	\$149.00
20/10/40 Yamaha	\$199.00
20/10/40 Acer	\$99.00

MOTHERBOARDS

SOYO

K7V DRAGON+	\$149.00
K7ADA	\$92.00
7VBA 133U	\$76.00

BIOSTAR

M7MIA RAID	\$129.00
M7VKG w/snd&vc	\$79.00
M7VKS w/snd&vc	\$59.00
M7VIB ATX Skt.A	\$98.00
M7VKD ATX Skt.A	\$67.00
M6VCT ATX Skt.370	\$59.00
M7TDB ATX P4	\$112.00

MICROSTAR

MS6340 Sckt 370	\$79.00
MS6309 Sckt 370	\$84.00
MS6368 370,Snd,Vid	\$69.00
K7T Turbo Limited	\$102.00

INTEL

815EA2 Vid.Snd.370	\$119.00
850GB P4 RAMBUS	\$162.00
D850MV P4 RAMBUS	\$143.00
D845WN P4 RAMBUS	\$166.00

DVD ROMS

Afreedy DVD 12X IDE	\$49.00
Samsung DVD 16X	\$62.00
Toshiba DVD 16X	\$73.00

**SELLING WHOLESALE
TO THE PUBLIC SINCE 1996!**

SOUND CARDS

CREATIVE LABS

PCI 16bit	\$19.00
PCI 128	\$26.00
Live Value	\$32.00
Audigy MP3 5.1	\$89.00
Audigy X-Gamer 5.1	\$89.00
Audigy Live Platinum	\$189.00

The TCW Barebone Pro



AMD

Just Add
**AMD CPU
Memory
Hard Drive
Modem**

\$199

**Call Today
1-800-394-4503
or visit us at
www.tcwo.com**

**ONLY
\$6.95
SHIPPING ***

Thompson's Computer Warehouse
is not responsible for typographical errors.

Prices subject to change without notice.

*Shipping special up to 150lbs UPS Ground Only

EVEN MORE PRODUCTS AVAILABLE ONLINE @ WWW.TCWO.COM



DREAM MACHINE

Use our Custom PC, Workstation and Server Configurators to build the AMD Athlon™ XP system of YOUR dreams...

Design your system from the Case and Motherboard to the CPU and Hard Drive to a CD-RW and DVD.

○ www.monarchcomputer.com

"...the most upgradable, compatible and affordable systems on the planet."



Monarch Com



800.611.0875
8.Monarch.PC
Ph: 770.939.8886
Fx: 770.939.9828

Copyrighted material

MOTHERBOARDS

AMD 266 FSB Socket A	\$69-149
AMD 266 FSB DDR Socket A	\$99-189
AMD KT 266A DDR boards	\$89-189
Tyan Dual MP Socket A	\$169-350
Asus Dual MP Boards	\$169-350

Additional products available at www.monarchcomputer.com:
Abit - Asus - DFI - Gigabyte - Intel - MSI - Tyan



CASES

(most prices represent cases without power supplies)

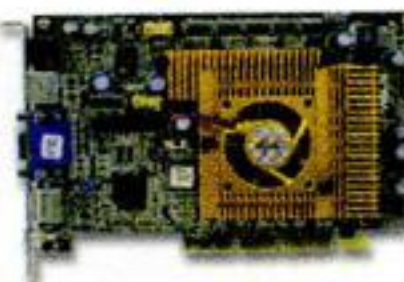
Antec ATX (colors: Black, Ivory & Purple)	\$89
Mid Tower ATX w/USB on front	\$32
Enlight Tower/Server/Rackmount	\$38-499
Lian-Li PC-70 Aluminum Server	\$225
Lian-Li PC-60 Aluminum	\$149
4U, 2U & 1U Rack Servers	\$159-499
CoolerMaster ATC-210	\$275



VIDEO CARDS

nVidia GeForce2 32MB-64MB	\$49-150
nVidia GeForce3 Ti200/500-64 MB	\$140-289
Cards from Matrox & ATI 8MB-32MB	\$25-85
Elsa Synergy III, Gloria III 32MB-64 MB	\$375-85
Asus GeForce3 64MB Ti200/500 AGP	\$189-299

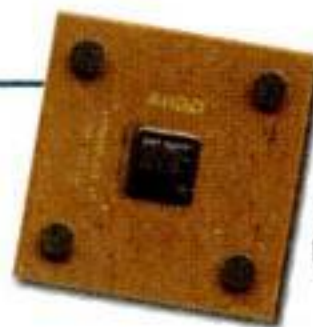
Additional products available at www.monarchcomputer.com:
3D Labs - Asus - ATI - ELSA - Gainward - Leadtek
Matrox - MSI - Powercolor - Vision Tek



PROCESSORS

(3 year warranty on OEM)

AMD Athlon™ XP 2000+	\$320	
AMD Athlon™ XP 1900+	\$249	
AMD Athlon™ XP 1800+	\$179	AMD Athlon™ MP 1900+ \$315
AMD Athlon™ XP 1700+	\$126	AMD Athlon™ MP 1800+ \$255
AMD Athlon™ XP 1600+	\$115	AMD Athlon™ MP 1600+ \$179



"The AMD Athlon™ XP Processor sets a new performance standard..."

HEATSINK FANS

Swiftech MCX370-OA Fan	\$39
ThermoEngine Super Cooler CPU	\$29
ThermalTake Volcano 6CU	\$19
ThermalTake Volcano II	\$16
CoolerMaster DP5-6I11A	\$7

HARD DRIVES

(3 year warranty)

20GB 7200RPM ATA 100 HD from:	\$79
30GB 7200RPM ATA 100 HD from:	\$89
40GB 7200RPM ATA 133 HD from:	\$109
60GB 7200RPM ATA 133 HD from:	\$139
100GB 7200RPM ATA 133 HD from:	\$215

MEMORY

PC133 128-256-512	\$19-89
DDR 2100 Corsair 256-512	\$49-125
DDR 2400 Corsair 256	\$69
1GB DDR to 1GB ECC Reg. Corsair	\$399-550

POWER SUPPLIES

250 Watt AT/ATX	\$8-15
300 Watt ATX	\$23-39
430 Watt Enermax Whisper ATX	\$89
(AMD Approved)	
400 Watt ATX	\$75-89
460 Watt ATX	\$105
(Dual Athlon Support)	

Monarch Computer also carries a full line of these products:
CD-Roms - CD-RWs - Power Supplies - Hard Drives - DVDs
Sound Cards - Modems - Networking - Floppy Drives - Zip Drives
Monitors - Printers - Keyboards - Scanners - Mice - Cables
Surge Protectors - Speakers - Software

Prices subject to change without notice. Monarch Computer not responsible for typographical errors.

Monarch XP 1600+ DVD

Part # 090005

Mid-Tower with 300Watt ATX Power Supply
DFI AK76-SN AMD761/VIA-686B
266FSB DDR Motherboard
AMD Athlon™ XP 1600+ Processor
Ball Bearing Heatsink Fan
DDR 256 MB 2100 (266FSB) Memory
Western Digital 40GB 5400 RPM Hard Drive
Sony DVD 16X 40 CDROM DDU1621
1.44 MB 3.5 inch Floppy Drive
Creative Labs Sound Card
nVidia GeForce2 64MB AGP Video Card
Lucent 56K v.90 Modem
Microsoft Windows XP Home Edition
Limited 1 Year Warranty

\$799.00

Monarch Athlon 1800 GTO DVD

Part # 090961

Monarch Mid Tower Case
Athlon SPI 350 WattPower Supply
DFI AMD 761 DDR 266FSB
AMD Athlon™ XP 1800+ Processor
with Quantispeed™ architecture*
CoolerMaster Heatsink Fan
DDR 256 MB 2100 Corsair
IBM 40 gig 7200 RPM ATA/100 HDD
16x DVD 40x CD-Rom
16x10x40 CDRW Burnproof Tech.
1.44 MB 3.5 inch Floppy Drive
Creative PCI Sound Card
nVidia 3-D GeForce 2 MX 400 64 MB AGP
Lucent 56K v.90 Modem
2 USB Ports, 2 Serial, 1 Parallel
Microsoft Windows XP Home Edition

\$998.00

Ultimate Linux Box

Part # 090115

Lian-Li PC-70 Aluminum Case
465 Watt Dual AMD Power Supply
2 - AMD Athlon™ 1800+ MP 266 FSB
Socket A Processors
2 - ThermalTake Volcano II CPU Coolers
1 GB PC2100 ECC DDR Corsair Memory
Tyan K7 Dual AMD Motherboard AMD760 Chipset
4 - 2.5v 184-pin Registered DDR DIMM sockets
5 - 64/32-bit 33MHz (5-volt) PCI slots
2 - 3Com 3C920 10/100Mbps LAN controllers on board
2 - Seagate 18 GB Cheetah 10000 RPM Ultra160 HDs
Sony 16X DVD 40X CD-ROM
SoundBlaster Live! 5.1 PCI Value Sound Card
Matrox 16MB G450 DDR Dual Head Video Card
Lucent 56k V.90 Modem

\$3,050.00

puter Systems

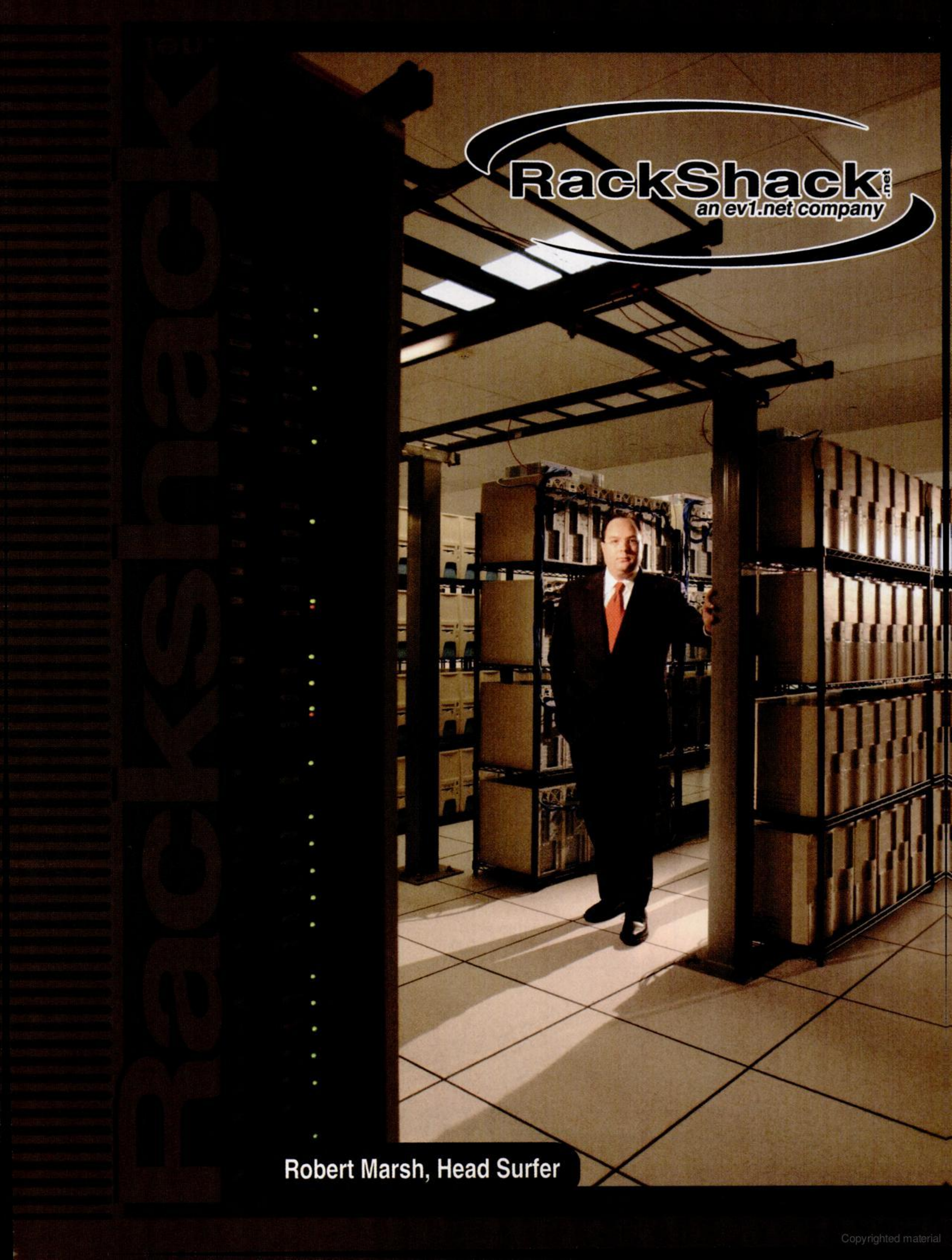
monarchcomputer.com

Government & Educational POs welcome

5242 Royal Woods Parkway Suite 160, Tucker, GA 30084

The AMD Athlon™ XP processor 1800+ Quantispeed™ architecture outperforms competitive 1.8GHz processors. *Quantispeed architecture operates at 1.533GHz

Copyrighted material

A man in a dark suit and red tie stands in the center of a server room aisle. He is flanked by tall black server racks filled with equipment. The room has a tiled floor and a ceiling with exposed metal beams and fluorescent lights. The overall lighting is warm and slightly dim.

RackShack.net
an ev1.net company

Robert Marsh, Head Surfer

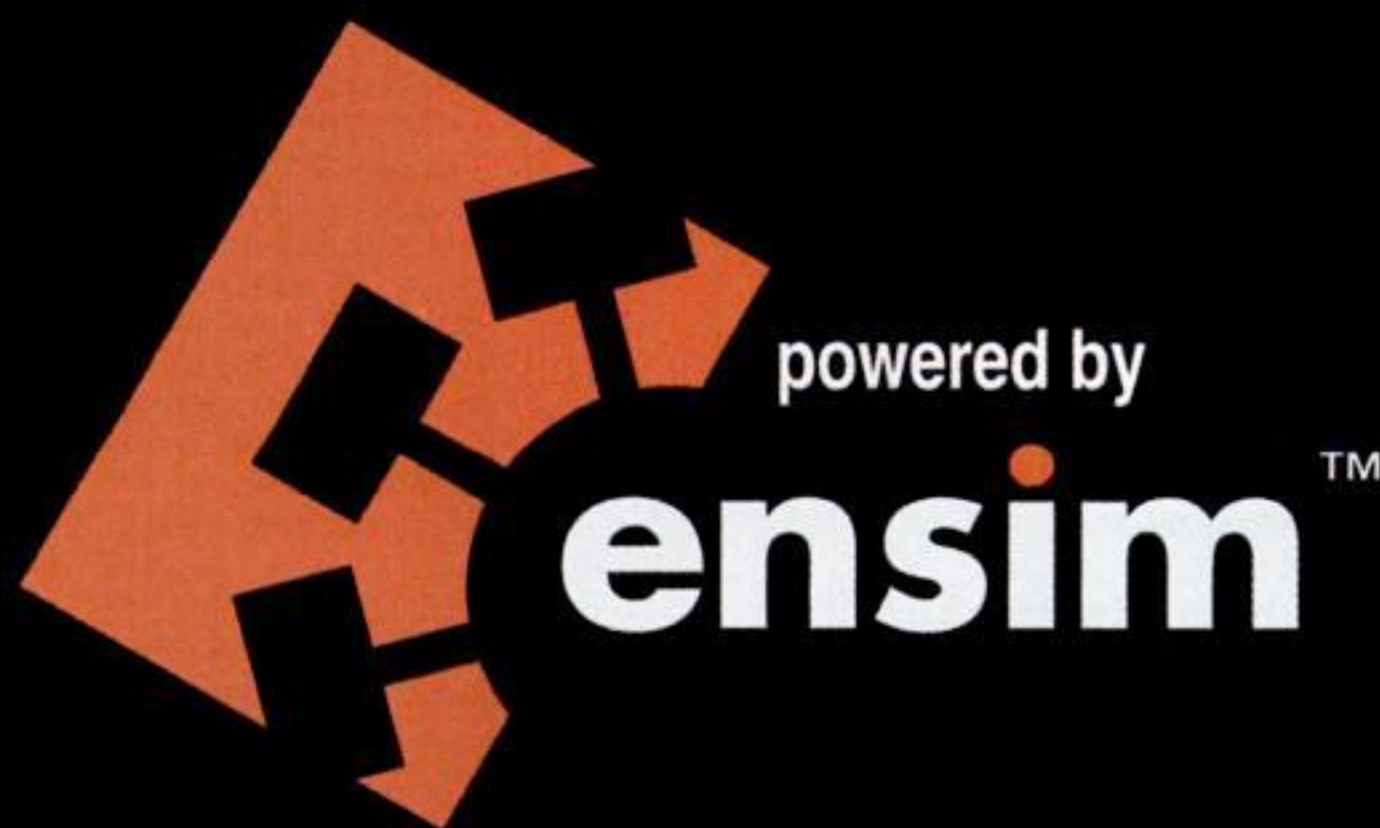
**Nothing beats our racks.
Absolutely nothing.**

Dedicated Server

AMD Duron 1 GHz

\$99*

**512MB RAM • 40GB HD
300GB Transfer Included**



**Instant
Activation**

Over 2,000 Served! *Per month. Set-up fees apply.
1-800-504-SURF | rackshack.net

BBA031

The AMD Athlon™ XP Processor Extreme Performance for Windows® XP

The AMD Athlon™ XP processor with QuantiSpeed™ Architecture^a is powering the next generation in computing platforms while delivering the ultimate performance for Microsoft's next generation operating system, Windows® XP. AMD worked diligently with Microsoft to ensure the AMD Athlon™ XP processor was compatible, easy to use, and optimized to run Windows® XP.

Productivity

Tremendous performance while working on multiple applications

Multimedia

Get rapid results when working with digital media including audio, video, and digital files

QuantiSpeed™ Architecture^a

The AMD Athlon™ XP processor features QuantiSpeed™ Architecture^a, which boosts overall productivity and enables the ultimate computing experience

Compatibility

Designed to run flawlessly on the world's most popular software

Wait less.

Experience more.

The new AMD Athlon™ XP processor features QuantiSpeed™ Architecture^a. You can now enjoy efficient multitasking when using multiple peripherals, quickly edit home movies, digital photos, boost software performance and burn CDs at lightning speed with fast file downloads. With the new and improved 3DNow! Professional technology, download files and surfing the 'Net while getting Crystal-clear audio enhances digital music and video experiences. Furthermore, you can now make gaming opponents over the 'Net wishing they had an AMD Athlon™ XP processor.



Editors' Choice

^a AMD Athlon XP Processor 1600+ with QuantiSpeed™ architecture outperforms competitive 1.6GHz PC processors. QuantiSpeed™ architecture operates at 1.40GHz
 AMD Athlon XP Processor 1700+ with QuantiSpeed™ architecture outperforms competitive 1.7GHz PC processors. QuantiSpeed™ architecture operates at 1.47GHz
 AMD Athlon XP Processor 1800+ with QuantiSpeed™ architecture outperforms competitive 1.8GHz PC processors. QuantiSpeed™ architecture operates at 1.53GHz
 AMD Athlon XP Processor 1900+ with QuantiSpeed™ architecture outperforms competitive 1.9GHz PC processors. QuantiSpeed™ architecture operates at 1.60GHz
 AMD Athlon XP Processor 2000+ with QuantiSpeed™ architecture outperforms competitive 2.0GHz PC processors. QuantiSpeed™ architecture operates at 1.67GHz

Atlas Xelerator XP

\$529

XM1201



XP3000

Athlon XP 1600+ Processor with QuantiSpeed™ architecture

- AMD Athlon XP Processor
- 200/266MHz FSB and UDMA-100 Support
- VIA KLE133 PC-133 and 4X AGP Support
- 256MB PC-133 SDRAM
- 40 GB UDMA-100 Hard Drive
- 56X CD-ROM
- Trident Blade 3D Shared AGP
- Lucent PCI 56K Voice Modem and 10/100 NIC
- PCI 3D Wavetable Stereo Sound
- Atlas 440W 2.1 Speakers w/Subwoofer
- Deluxe Windows 98 Keyboard
- Deluxe Mouse w/Wheel
- Microsoft Windows XP Home Edition
- Sun Micro StarOffice
- AMD Certified Power Supply

Athlon XP 1700+ with QuantiSpeed™ architecture **\$549** XM1202
 Athlon XP 1800+ with QuantiSpeed™ architecture **\$569** XM1203
 Athlon XP 1900+ with QuantiSpeed™ architecture **\$629** XM1204
 Athlon XP 2000+ with QuantiSpeed™ architecture **\$729** XM1205

\$979

XM2203



XP6000

Athlon XP 1800+ Processor with QuantiSpeed™ architecture

- New VIA KT266A DDR Chipset
- 200/266MHz FSB and UDMA-100 Support
- DDR PC1600/2100 and 4X AGP Support
- 256MB PC2100 (266MHz) DDR RAM
- 60 GB UDMA-100 Hard Drive
- 16X DVD-ROM
- Nvidia GEFORCE 2 Titanium 3D DVD 64MB DDR
- Creative Labs Modem Blaster PCI Voice Modem
- SoundBlaster PCI 128 4-Channel 3D Wavetable
- Creative Labs Inspire 4.1 4400 Speakers w/Subwoofer
- 17" 0.27DP OSD Monitor
- Deluxe Windows 98 Keyboard
- Deluxe Mouse w/Wheel
- Microsoft Windows XP Home Edition
- Sun Micro StarOffice
- 350W AMD Certified Power Supply

Athlon XP 1600+ with QuantiSpeed™ architecture **\$ 939** XM2201
 Athlon XP 1700+ with QuantiSpeed™ architecture **\$ 959** XM2202
 Athlon XP 1900+ with QuantiSpeed™ architecture **\$1,039** XM2204
 Athlon XP 2000+ with QuantiSpeed™ architecture **\$1,139** XM2205

\$1,299

XM3203



XP8000

Athlon XP 1800+ Processor with QuantiSpeed™ architecture

- New nForce TwinBank DDR Chipset
- 200/266MHz FSB and UDMA-100 Support
- DDR PC1600/2100 and 4X AGP Support
- 256MB PC2100 (266MHz) DDR RAM
- 80 GB UDMA-100 Hard Drive
- 16X DVD-ROM
- Nvidia GEFORCE 3 Ti 200 3D DVD 64MB DDR
- nForce 10/100 Ethernet NIC and 56K Modem
- nForce APU 3D Dolby Digital 5.1 Certified Sound
- Creative Labs Inspire 5.1 5300 Speakers w/Subwoofer
- NEC AS90 19" (3-Year New Replacement) Monitor
- Microsoft Intelli Internet Keyboard
- Microsoft Intelli Mouse w/Wheel
- Microsoft Windows XP Home Edition
- Sun Micro StarOffice
- AMD Certified Power Supply

Athlon XP 1600+ with QuantiSpeed™ architecture **\$1,259** XM3201
 Athlon XP 1700+ with QuantiSpeed™ architecture **\$1,279** XM3202
 Athlon XP 1900+ with QuantiSpeed™ architecture **\$1,369** XM3204
 Athlon XP 2000+ with QuantiSpeed™ architecture **\$1,459** XM3205



**ATLAS MICRO
LOGISTIC INC.**

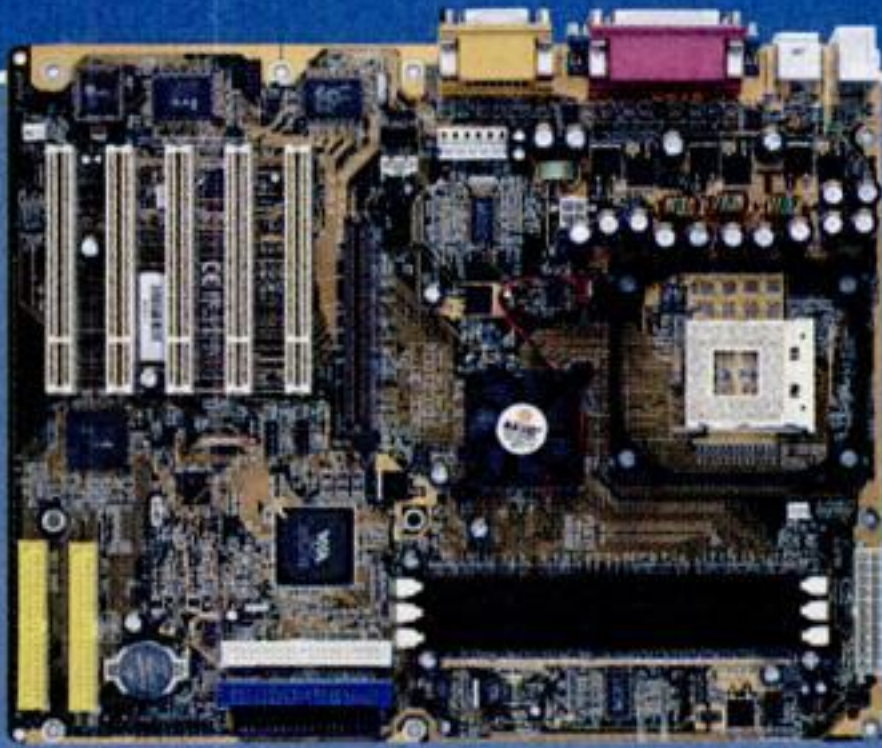
www.buy-atlas.com
1.800.336.6898

©2001 Atlas Micro Logistic Inc. All rights reserved. All brands and product names are trademarks or registered trademarks of their respective companies. All prices and configurations are subject to change without notice or obligation. Original shipping charges and opened software are non-refundable. All returns have to be accompanied with an RMA number and must be in re-salable condition. Systems pictures may include some equipment and/or accessories which are not standard features. Atlas Micro Logistic Inc. is not responsible for any typographical errors.

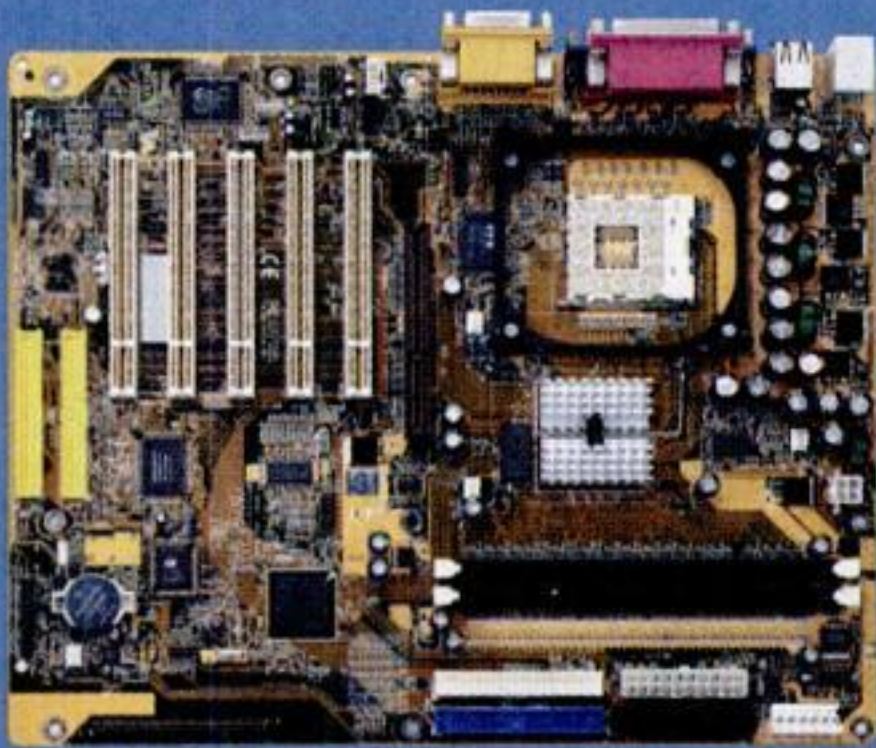


Shuttle Grand Tour Series

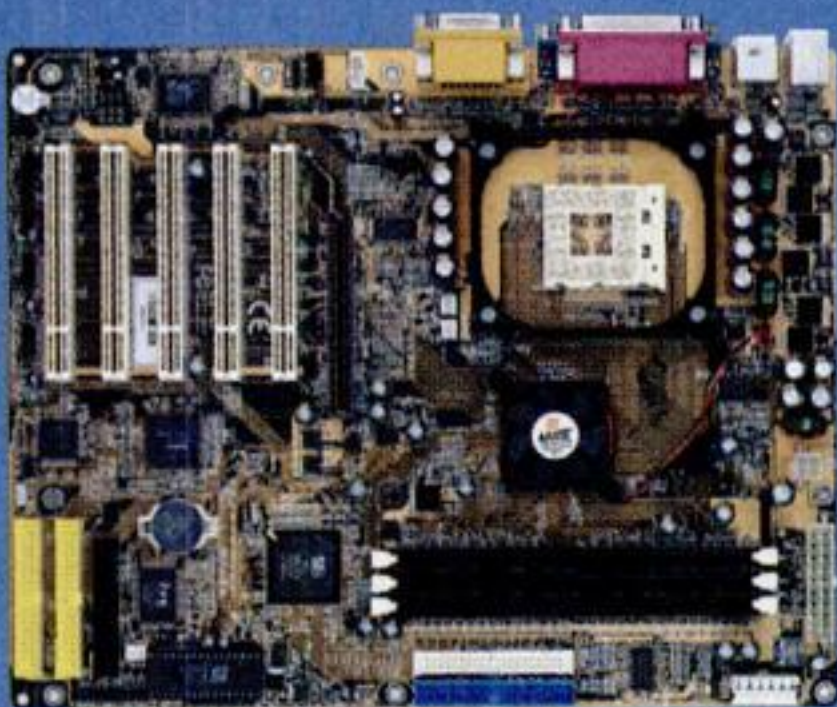
for New Generation P4 and AMD XP



AV45GTR/ P4X266A/ DDR
Intel P4 Ready



AB40GTR/ Intel 845/ DDR
Intel P4 Ready



AS40GTR/ SiS 645 DDR
Intel P4 Ready



AK35GTR/ KT266A/ DDR
AMD XP Ready



"A new toy for OEM"
- VIA Hardware

LOST CIRCUITS

"Rolls Royce of the PC world"
- Lost Circuits



ALL ABOUT ALUMINUM!
SpaceWalker SV24 Mini PC



"A new class of Mini PC"
- Tech Report



"Exceptional quality at the top of Barebones"
- ClubOC.net

 **Shuttle®**
www.spacewalker.com



MORE POWER

The AD11 supports all the new Athlon XP processors!

TURBOCHARGED PERFORMANCE

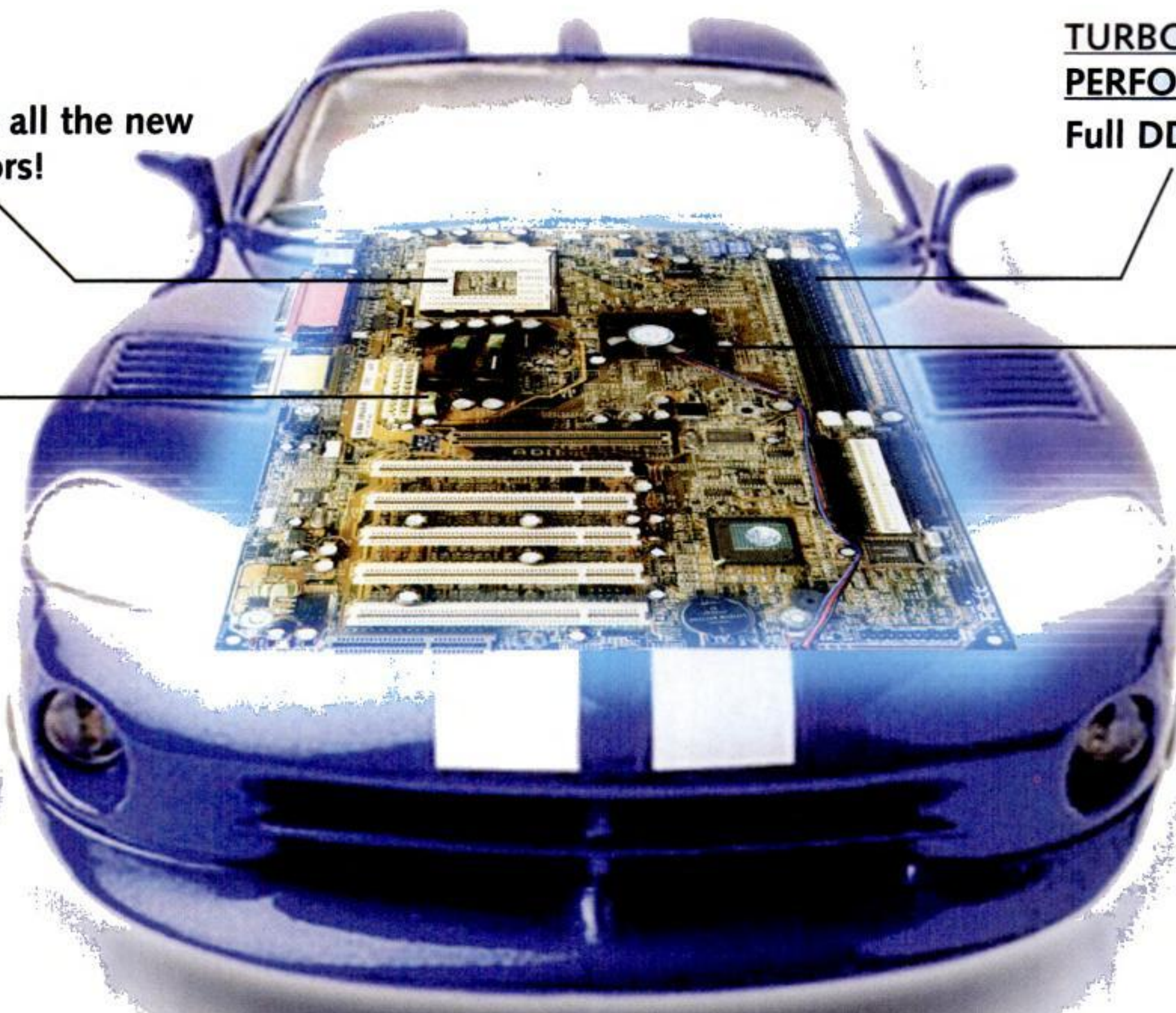
Full DDR 2100 Support!

UNBEATABLE STABILITY

A huge array of robust SMD regulators provide plenty of core voltage!

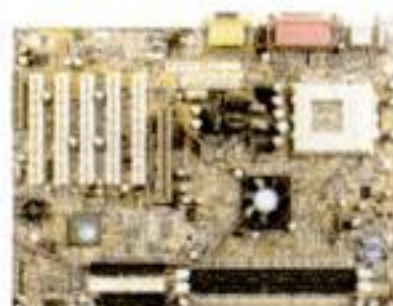
ULTIMATE COOLING

AMD 761 Chipset protected by active cooler!



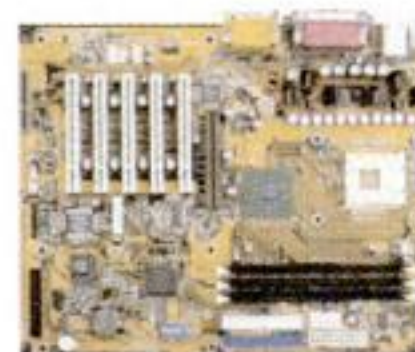
NEED MORE PERFORMANCE?

FIC Motherboards have all the power you need!



AD11 "Gamers First Choice"

- 266 MHz FSB
- PC 2100 DDR
- AMD 761 Chipset
- Athlon XP Approved



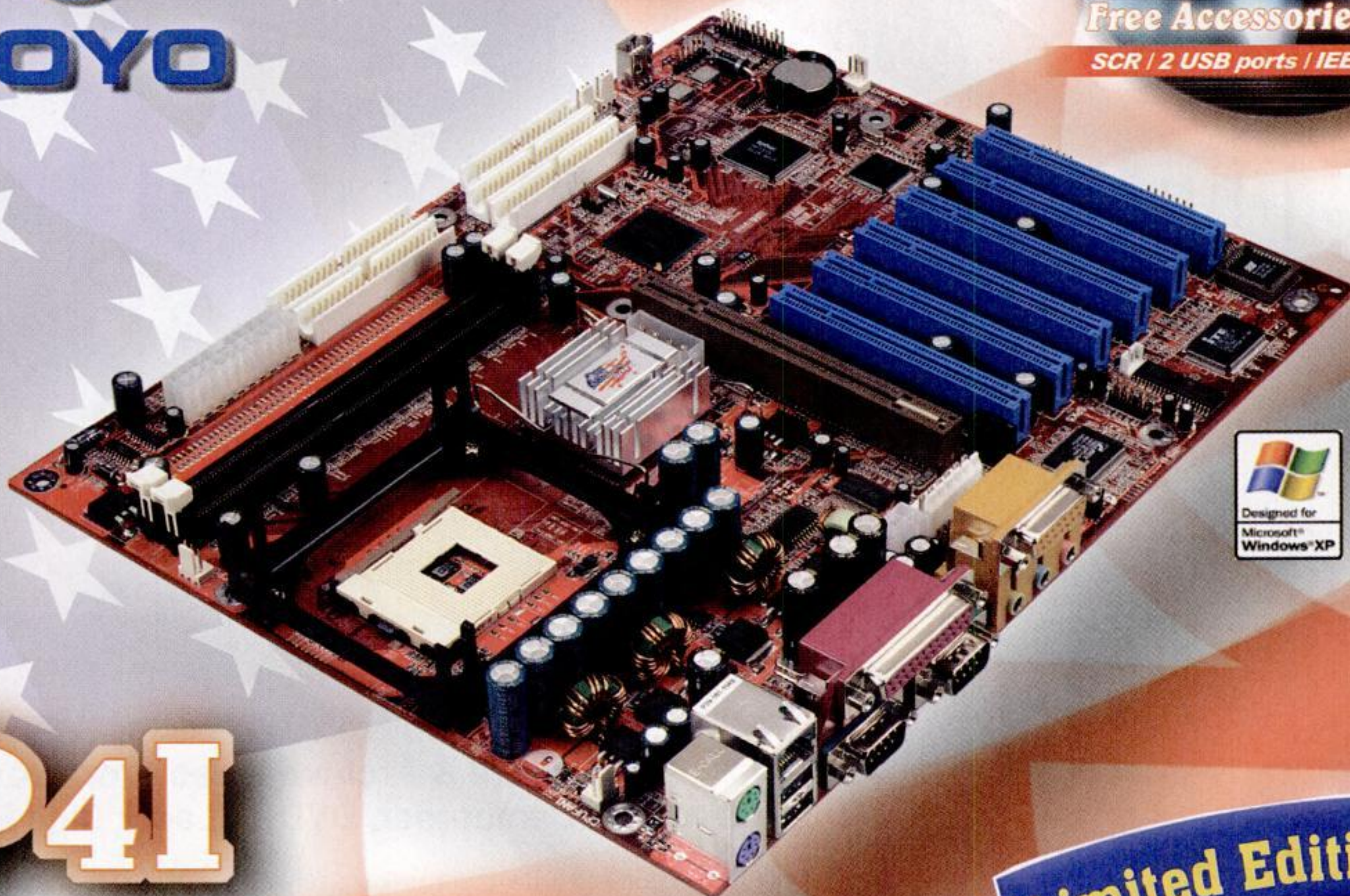
VC11 "P4 Powerhouse"

- 400 MHz FSB
- PC 133 SDRAM
- Intel 845 Chipset
- Realtek LAN



Available at
Fry's ELECTRONICS





P4I

FIRE DRAGON

Limited Edition

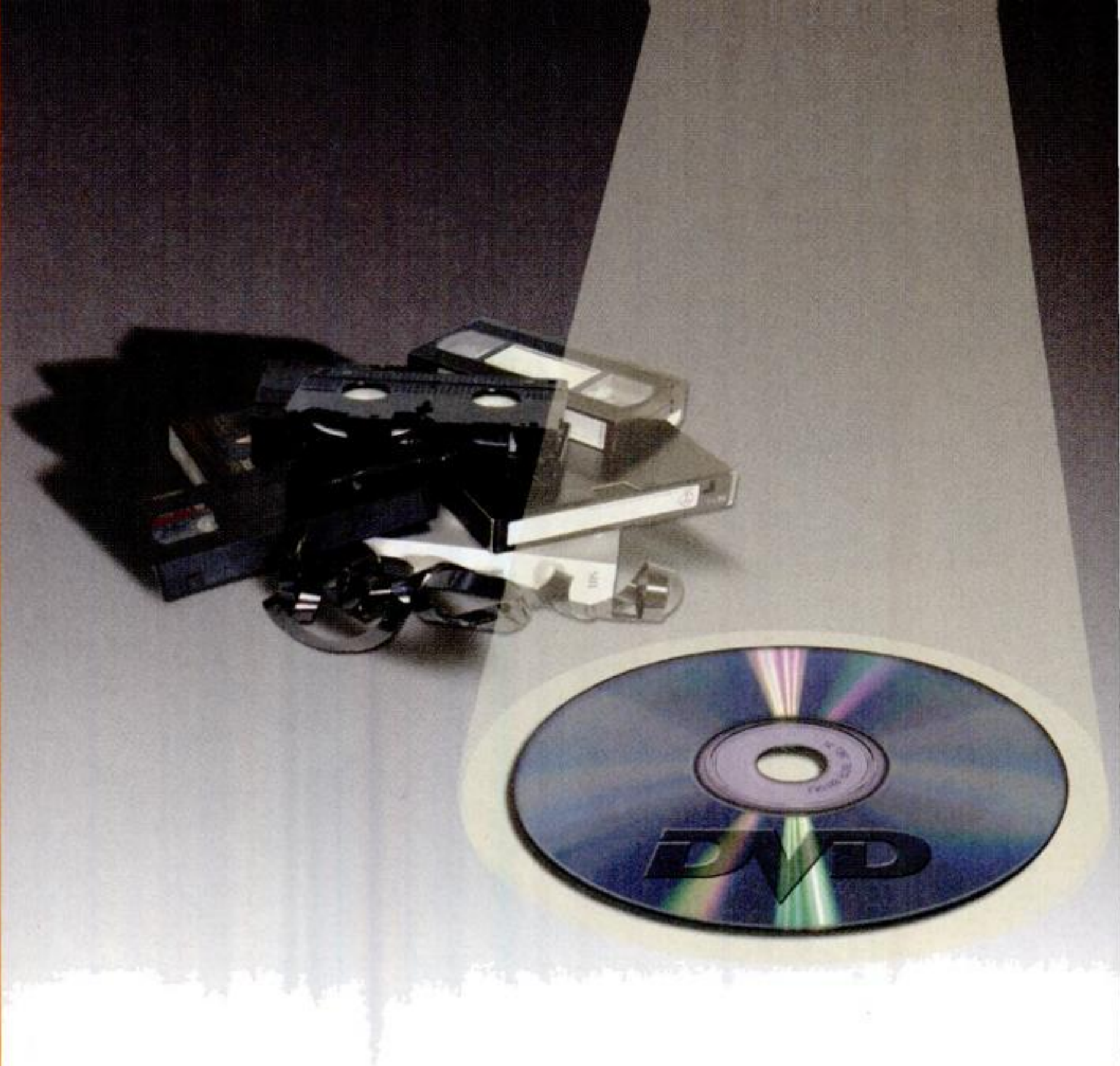
- ▶ INTEL Socket478 processor based i845D ATX motherboard
- ▶ ATA133 IDE RAID (RAID 0, 1, 0+1)
- ▶ 6 CH H/W Audio (S/PDIF optical and coaxial output)
- ▶ Ethernet (10/100 Mbps)
- ▶ IEEE 1394
- ▶ Package including " Σ-BOX"
- ▶ One Smart Card Reader & One 1394 port & Two USB ports

Available at
fry's **Outpost.com**

All brand names and trademarks are the properties of their respective owners.
Technical data are subject to change without notice. E & O.E.

SOYO INC
41484 Christy Street, Fremont, CA 94538, USA
T : 1-510-226-7696 F : 1-510-226-9218
[http:// www.soyousa.com](http://www.soyousa.com)

VHS Tapes?
That's so 2001.
**Make DVD Movies.
Now.**



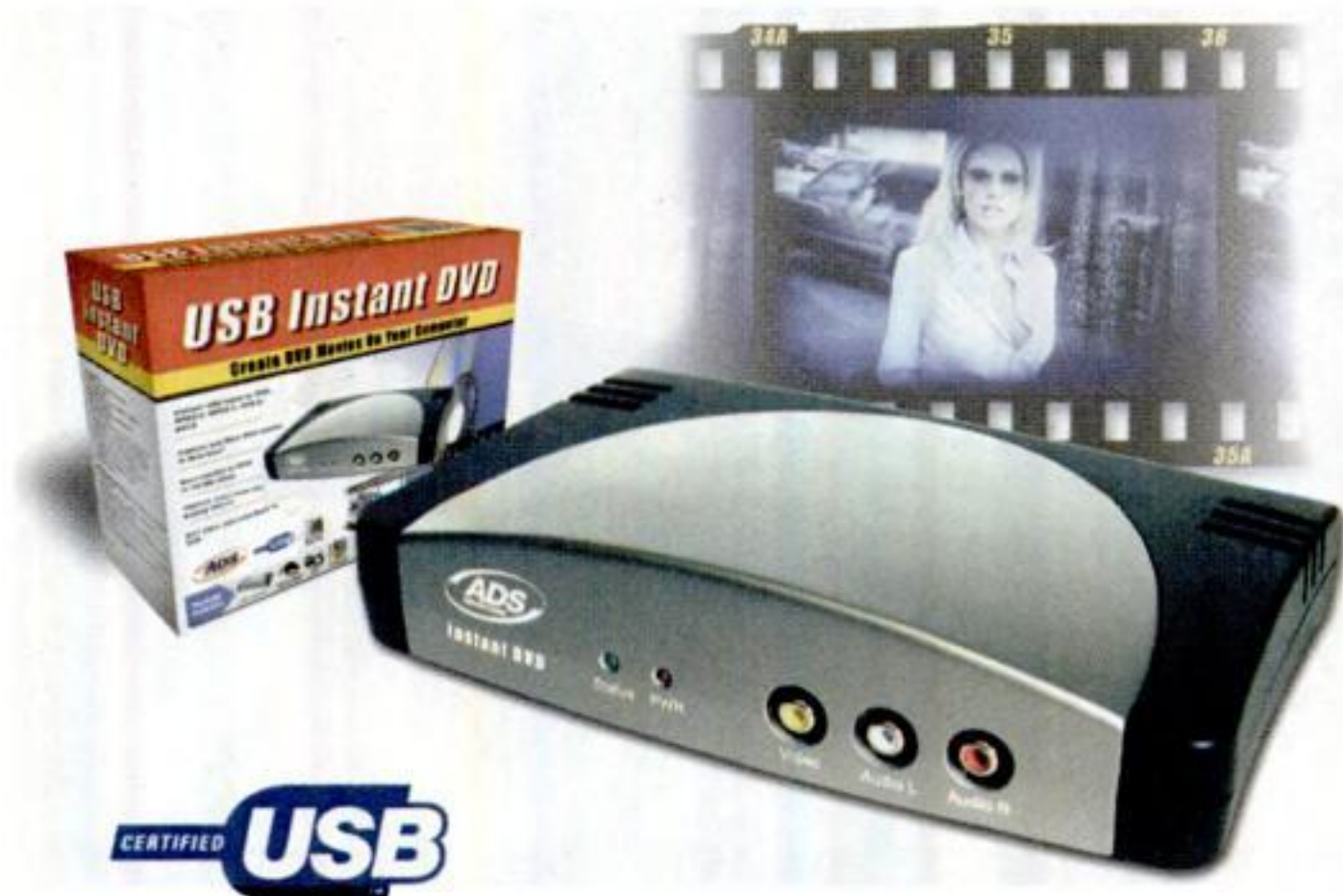
USB Instant DVD

**Capture & Archive Video From Your
VCR, Camcorder, DVD or Laser Disc Player**

Your favorite memories are slowly deteriorating on VHS tapes. Archive them today on DVD or CD and protect your precious videos from damage caused by time, heat and maybe even your dog, Sparky.

Capture any video in DVD format through your USB port and directly burn to your CD or DVD recorder. Or you can edit and author your very own DVD movie.

It's that simple. VHS Tapes? That's so 2001.



USB Instant DVD

- Capture Full-Resolution DVD-Format MPEG-2 Video in Real Time
- Real Time Capture and Burn to DVD-R or CD-R Discs*
- Archive Video From Any VCR, Camcorder, DVD or Laser Disc Player
- Capture as DVD, MPEG-2, MPEG-1, VCD or SVCD
- Edit Video and Send Back to VCR
- No cards to install, easily plugs into your computer's USB port
- The perfect accessory to your new DVD-R drive!

Software Bundle Includes:
VideoStudio 5 video editing
& **MyDVD 3.0** DVD authoring



Available everywhere including: Tiger Direct, Fry's, Comp USA, Bestbuy.com, FutureShop, DataVision.com, JandR, London Drugs, Micro Center and more! * CD-RW drive required to create CD-RW discs. DVD recordable drive required to create DVD discs.

Don't Steal Movies.



www.adstech.com
800-888-5244

Connect, Create, Store

Copyrighted material

VICIOUS™

• HARDWARE FOR THE HARDCORE •

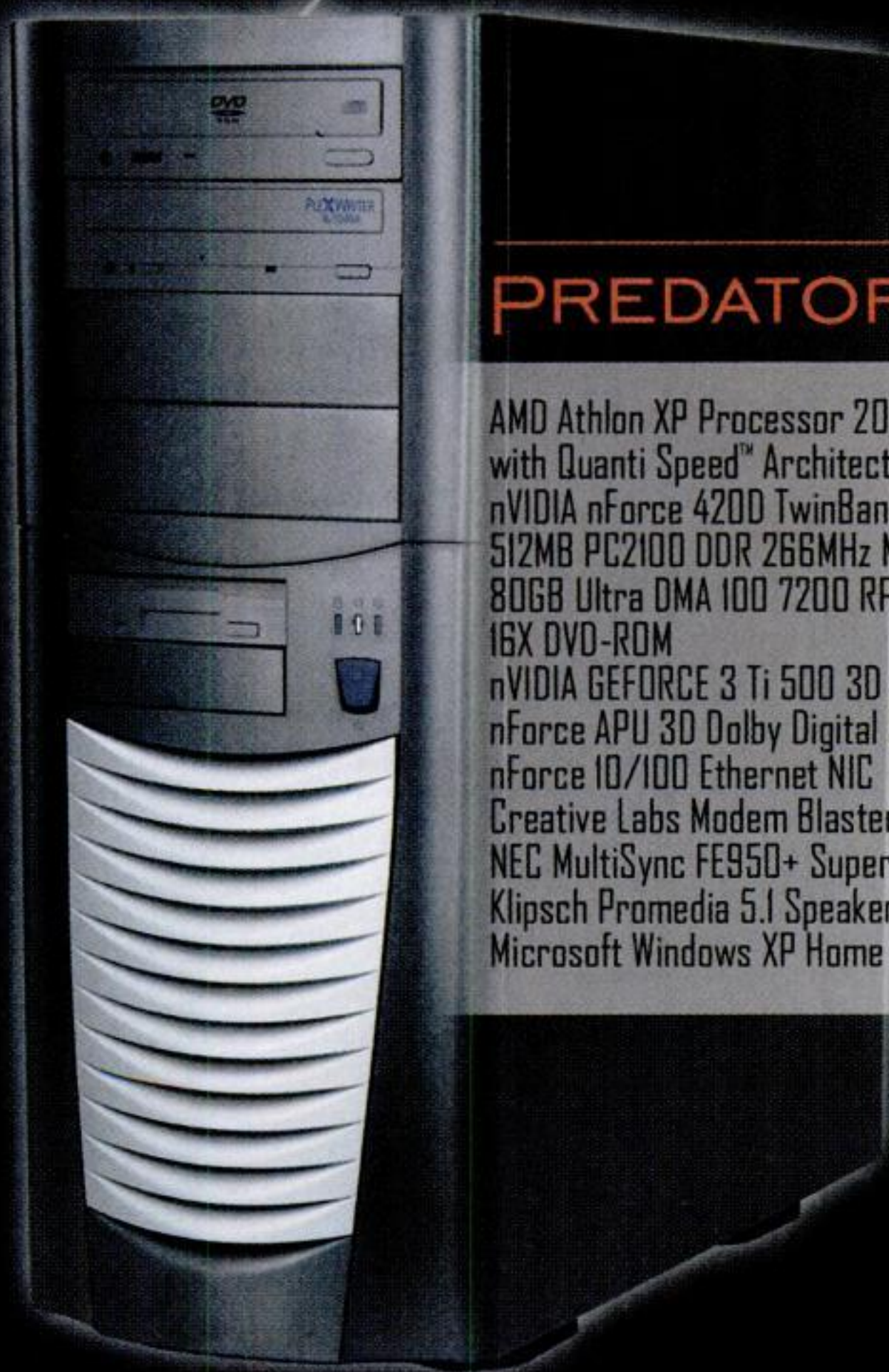


SHADOW

\$1,299

VS0202

AMD Athlon XP Processor 1800+
with QuantiSpeed™ Architecture
VIA KT266A Enhanced DDR Chipset
256MB PC2100 DDR 266MHz Memory
40GB Ultra DMA 100 7200 RPM Hard Drive
16X DVD-ROM
nVIDIA GEFORCE 2 Ti 3D DVD 64MB DDR
SoundBlaster Audigy 5.1 Sound
with SB1394 Firewire Port
Creative Labs Modem Blaster PCI Voice Modem
NEC AccuSync AS70 17" 0.27 dp Monitor
Creative Labs Inspire 5.1 5300 Speakers
Microsoft Windows XP Home Edition



PREDATOR

\$2,449

VP0204

AMD Athlon XP Processor 2000+
with Quanti Speed™ Architecture
nVIDIA nForce 4200 TwinBank 128-Bit DDR
512MB PC2100 DDR 266MHz Memory
80GB Ultra DMA 100 7200 RPM Hard Drive
16X DVD-ROM
nVIDIA GEFORCE 3 Ti 500 3D DVD 64MB DDR
nForce APU 3D Dolby Digital 5.1 Certified Sound
nForce 10/100 Ethernet NIC
Creative Labs Modem Blaster PCI Voice Modem
NEC MultiSync FE950+ SuperFlat 19" 0.25 dp Monitor
Klipsch Promedia 5.1 Speakers
Microsoft Windows XP Home Edition

VISIT OUR SITE AT WWW.VICIOUSPC.COM OR CALL TOLL FREE: 1-866-289-2872

382 Bayshore Blvd. Unit A · San Francisco, CA 94124 · FAX: (415) 550-7988



© 2002 Viciouspc.com. All rights reserved. All brands and product names are trademarks or registered trademarks of their respective companies. All prices and configurations are subject to change without notice or obligation. Original shipping charges and opened software are non-refundable. All returns have to be accompanied with an RMA number and must be in re-salable condition. Systems pictures may include some equipment and/or accessories which are not standard features. Viciouspc.com is not responsible for any typographical errors.

www.abspc.com

3 Year Limited Parts Warranty / Lifetime Labor Warranty / 30 Days Money Back Guarantee

Optional 24 / 7 Tech Support Available / 30 Days Earthlink Internet Access

100% Non-Proprietary & Upgradable



GSA Contract #GS-35F-0567K



Best Overall Performance

"ABS delivers the best overall performance of the five systems reviewed here..."

Cnet Editors' Choice December 2001



Boost software performance with
Quantispeed™ architecture

Make gaming opponents wish they had an
AMD Athlon™ XP processor

3DNow! Professional technology brings digital
photos and video files to life with rich,
vibrant colors and textures

Enjoy efficient multitasking when
using multiple peripherals

EXTREME
PERFORMANCE
FOR WINDOWS® XP



ABS™ CHEETAH



- AMD Athlon™ XP 266FSB DDR ATA100 4X AGP Mainboard
- High-Performance Heatsink/Cooling System
- ATX Beige Mid-Tower Case w/300 Watt (AMD Certified)
- Kingston 512MB Fast PC2100 DDR SDRAM Memory
- 100GB 7200RPM Ultra ATA100 Hard Drive
- 16X DVD Player
- Plextor 24X10X40 BURN-Proof™ CD-ReWritable Drive
- New Nvidia GeForce 3 Ti 500 w/64MB 4X AGP Video Card
- Hitachi CM715 19" .26mm 1600x1200 Color Monitor
- New Creative Labs SoundBlaster Audigy Platinum Card & Mic
- New Altec Lansing 641 4.1 THX-Certified 400-Watt Surround Sound Subwoofer/Speaker System
- U.S. Robotics PCI Hardware 56K V.90 Data/Fax/Modem
- 3Com 905 10/100 Network Controller, Broad Band Ready
- Mitsumi 1.44MB Floppy Drive
- Microsoft Internet Keyboard & Microsoft IntelliMouse Optical
- Microsoft Windows XP Home Edition
- Free Software: Corel WordPerfect Office 2002 CD
- Free ABS™ High Quality Cloth-Surface Mouse Pad
- Free ABS™ PC Organizer (3" Color Binder w/Plastic Ziplock Pockets for User Manual, Drivers & Application Softwares)

AMD Athlon™ XP Processor 2000+ with
Quantispeed™ architecture* outperforms competitive 2.0GHz processors

\$1949 # 2810

AMD Athlon™ XP Processor 1900+ with
Quantispeed™ architecture** outperforms competitive 1.90GHz processors

\$1899 # 2819

ABS™ JAGUAR



- AMD Athlon™ XP 266FSB DDR ATA100 4X AGP Mainboard
- High-Performance Heatsink/Cooling System
- ATX Beige Mid-Tower Case w/300 Watt (AMD Certified)
- Kingston 256MB Fast PC2100 DDR SDRAM Memory
- 60GB 7200RPM Ultra ATA100 Hard Drive
- 16X DVD Player
- Plextor 24X10X40 BURN-Proof™ CD-ReWritable Drive
- New Nvidia GeForce 2 Ti w/64MB 4X AGP Video Card
OpenGL, DirectX, Direct3D Support
- Hitachi 17" .27DP 1280x1024 Color Monitor
- New Creative Labs SoundBlaster Audigy Sound Card & Mic
- Creative Inspire 5300 5.1 Subwoofer/Speaker System
- Zoom 56K V.92 Data/Fax/Modem
- PCI 10/100 Network Controller, Broad Band Ready
- Mitsumi 1.44MB Floppy Drive
- Microsoft Office Keyboard & Microsoft IntelliMouse Optical
- Microsoft Windows XP Home Edition
- Free ABS™ High Quality Cloth-Surface Mouse Pad
- Free ABS™ PC Organizer (3" Color Binder w/Plastic Ziplock Pockets for User Manual, Drivers & Application Softwares)
- ✓Add Lexmark Z43 Color Printer @ \$99

AMD Athlon™ XP Processor 1800+ with
Quantispeed™ architecture*** outperforms competitive 1.80GHz processors

\$1229 # 2828

AMD Athlon™ XP Processor 1700+ with
Quantispeed™ architecture**** outperforms competitive 1.70GHz processors

\$1199 # 2827

ABS™ PANTHER

- AMD Athlon™ XP 266FSB DDR ATA100 4X AGP Mainboard
- High-Performance Heatsink/Cooling System
- ATX Beige Mid-Tower Case w/300 Watt (AMD Certified)
- Kingston 256MB Fast PC2100 DDR SDRAM Memory
- 30GB 7200RPM Ultra ATA100 Hard Drive
- 56X CD-ROM Player
- ✓Add 16x10x40 CD-ReWritable Drive @ \$89
- ✓Optional Hitachi 17" .27DP 1280x1024 Color Monitor @ \$165
- New ATI Radeon 7200 w/64MB 4X AGP Video Card
- Creative Labs SoundBlaster Live! 5.1 Sound Card & Mic
- Altec Lansing AVS500 Subwoofer/Speaker System
- Zoom 56K V.92 Data/Fax/Modem
- PCI 10/100 Network Controller, Broad Band Ready
- Mitsumi 1.44MB Floppy Drive
- Microsoft Internet Keyboard & Microsoft IntelliMouse
- Microsoft Windows XP Home Edition
- Free ABS™ High Quality Cloth-Surface Mouse Pad
- Free ABS™ PC Organizer (3" Color Binder w/Plastic Ziplock Pockets for User Manual, Drivers & Application Softwares)
- ✓Add Microsoft Office Small Business Edition @ \$189
- ✓Add Epson C60 Stylus Color Printer @ \$89

AMD Athlon™ XP Processor 1700+ with
Quantispeed™ architecture***** outperforms competitive 1.70GHz processors

\$749 # 2837

AMD Athlon™ XP Processor 1600+ with
Quantispeed™ architecture***** outperforms competitive 1.60GHz processors

\$729 # 2836

ABS™ PCs use genuine Microsoft® Windows® www.microsoft.com/piracy/howtotell



www.abspc.com

800.639.1470

Sales Hours: Mon-Fri 7:00AM-6:00PM PST
Sat 9:00AM-1:00PM PST

Technical Support: Mon-Fri 8:30AM-5:30PM PST Technical Support: 800.685.3471 General Office: 562.695.8823 9997 East Rose Hills Road, Whittier, CA 90601
Price, specification, and terms are subject to change without notice. Picture shown with upgrad options. ABS™ is not responsible for errors in typography and/or photography. 30-day money back guarantee does not include opened software, parts, or special order merchandise. Original shipping and handling fee along with return shipping charge are non-refundable. Products returned after 90 days on a non-refundable condition are subject to a restocking fee. Onsite service may be provided by contracted third party provider. Technician will be dispatched if necessary following phone support. AMD, the AMD logo, AMD Athlon and combinations thereof are trademarks of Advanced Micro Devices, Inc. *Quantispeed™ architecture operates at 1.67GHz. **Quantispeed™ architecture operates at 1.60GHz. ***Quantispeed™ architecture operates at 1.53GHz. ****Quantispeed™ architecture operates at 1.47GHz. *****Quantispeed™ architecture operates at 1.40GHz.

Corporate Sales **800.926.8088**

Sales Hours: Mon-Fri 7:00AM-5:00PM PST

Copyrighted material

Case Specification & Price List

Model	Price	Dimension W.D.H.	MB Size	5.25 Ext./Inl.	3.5 Ext./Inl.	P.S.
R02/BARE	180/300	19x17.5x3.5	M/ATX	1/0	1/1	150W
R04B/W	275	19x24.3x3.5	ATX	1/0	1/3	250W
R05B	430	19x24x3.5	ATX	1/0	1/4	430W
R06B	250	19x20.2x3.5	ATX	4/0	1/5	300W
R08 B/W	1550/1800	19x22x3.5				
R10 B	175	19x17x7	ATX	3/0	1/1	300W
R14 B/W	215	19x21x7	ATX	3/0	1/3	300W
R15	295/510	19x24.4x7	ATX	6/0	2/2	300W
R16 B/W	225	19x18x7	ATX	3/0	1/2	250W
R17 B 4U	215	19x21x7	ATX	3/0	1/2	300W
R20 B/W	275	19x20.5x7	ATX	8/0	3/0	300W
R21 B/W	275	19x18x7	ATX	8/0	3/0	300W
R22B/B/W	635/950	19x23x10.5	ATX	8/0	1/0	300W/R
R26B/B/W	630/650	19x22.6x10.7	ATX	4/0	2	300W/R
RSP	28	19x17x8.7	ATX	8/0		300W
RSM169-100	65/75	5.8x9.3x1.6		1		
O01B	75	10x11.5x3		1/0		60W
O01B1	65	8.3x10.6x2.8		1/0		50W
O02B	88	7.9x11.4x3.5		2/0		60W
O02B1	78	7.9x11.2x6.5		2/0		80W
O04B	105	6.8x15.3x9.3		4/0		230W
O04B1	100	7.5x17.3x10.2		4/0		200W
O07B	180	7.5x15.8x13		7/0		250W
O08B	280	8.4x20.2x18.3		8/0		300W
O08B1	180	7.5x17.9x17.1		8/0		250W
O10SLPX/TV	255/275	11.9x12.6x3	LPX	1/0	1/1	90W
O109(SP 98) bare	175	11x12.3x3.9	NLX	1/0	1/1	135W
O111N bare	260	11.6x10.6x2.5	MNLX	1/0	0/1	100W
O192M.ATX/B	85	13.1x16.5x3.5	M/ATX	1/0	1/1	150W
224	75	17.4x18.8x6.1	ATX	3/0	2/2	230W
267	70	16.8x16.8x6.2	ATX	2/0	2/1	250W
271	85	17.3x15.9x5.5	ATX	2/0	1/1	250X
288	75	16.9x17x6	ATX	3/0	2/1	230W
304	55	7.9x18.8x13.9	ATX	3/0	2/1	300W
325B	72	8x18.5x17	ATX	3/0	2/1	235W
327	72	7.5x16.5x17.3	ATX	3/0	2/2	230W
337	75	7.8x18.8x16.5	ATX	3/0	2/2	300W
338	55	7.4x14.7x13.8	M/ATX	2/0	2/1	145W
366	55	7.2x15.5x14.3	M/ATX	2/0	1/1	235W
367	55	7.7x16.5x17	ATX	3/0	2/2	235W
370	80	8.3x17.3x16.1	ATX	3/0	2/2	250W
393	80	7.5x17.1x17	ATX	3/0	2/2	250W
393	90	9x17.5x17.5	ATX	6/0	1/1	250W
396	55	8.3x17x15.5	ATX	3/0	1/3	230W
401	110	8.5x17.3x18	ATX	2/0	2/2	250W
405B	75	7.8x17.5x17.2	ATX	4/0	2/2	320W
408	80	8.2x19.8x18.4	ATX	3/0	1/5	250W
409	295	9.5x22x18.1	ATX	4/0	2/5	300W
411	67	7.2x17.2x16.8	ATX	4/0	2/1	250W
412	67	7.2x17.2x16.8	ATX	4/0	1/2	250W
413S/B/L	67	8.5x19.5x18	ATX	4/0	2/1	250W
415	75	8.8x19.5x19.7	ATX	8/0	1/0	300W
418B/W	115	8.1x18.8x21.4	AT	4/0	2/4	300W
422	70	7.7x16.6x18.1	AT	4/0	1/4	250W
424	70	7.5x18.9x16.7	ATX	4/0	2/1	250W
426B/W/S	70/75	7.5x16.5x19.3	ATX	3/0	2/2	250W
427	75	7.5x16.6x17.3	ATX	3/0	2/2	250W
436	70/85	8.6x18x15.6	ATX	4/0	2/1	250/300W
442	110	8.5x17.5x18.6	ATX	4/0	2/1	300W
455	185	9.3x17x17.2	XEON/ATX	2/0	2/2	300W
465	185	7.5x16.7x18.8	ATX	3/0	1/4	250W/300W
467	75/90	8.3x17.3x21.3	ATX	4/1	1/2	250W
470	110	6.4x17.5x21.3	ATX	3/1	1/4	250W
471	110	6.4x17.5x21.3	ATX	4/0	2/2	250W
472	60	7.8x17.2x17.2	ATX	4/0	2/2	300W
474	285	7.8x17.2x17.2	ATX	4/0	2/2	300W
476	70	8x17.2x17	ATX	4/0	2/2	300W
478	155	7.9x18.4x16.4	ATX	4/0	2/1	300W
479	155	7.9x18.4x16.4	ATX	4/0	2/1	300W
480	195	7.8x18x16.5	ATX	4/0	2/1	300W
482B	80	7.8x19.8x17.5	ATX	4/0	2/2	250W
486	67	9.9x19.5x17	ATX	4/0	2/1	250W
489	92	7.3x17x17	ATX	3/0	1/2	235W
492	229	8.3x17.5x17.6	ATX	4/0	3/5	300W
493B	234	8.3x17.5x17.6	ATX	4/0	3/5	300W
496	60	8.25x17.8x16.5	ATX	4/0	1/3	250W
501	155	8.25x17.2x23.8	ATX	4/0	2/4	300W
503R/B	455	14.8x20.4x18.4	ATX	8/0	2/4	300RW
503B	295	14.8x20.4x18.4	ATX	8/0	2/4	300W
505	555	14.6x23x26.8	ATX	12/0	1/8	300W
505R	670	14.6x23x26.8	ATX	12/0	1/8	300W/R
506/R	155/370	7.8x16.5x24.4	ATX	6/0	2/2	300W/R
518	145	8.1x15.5x26.5	ATX	6/0	2/6	300W
524	380	13.9x15.6x19.1	ATX	7/0	1/2	300RW
526B/W	105/120	7.5x17.5x24.5	ATX	6/0	1/4	250W/300W
528	95/110	7.5x16.5x24.8	ATX	6/0	1/5	250W/300W
536	93/108	7.8x17x24	ATX	5/0	1/5	250W/300W
538	290	8x20.5x24.5	ATX	5/0	1/6	300HW
560/R	290/445	15x24.5x23.5	ATX	11/0	2/4	300W/300R
562/RB/W	250/470	8.7x17.9x26.8	ATX	9/1	1/0	300W/300R
563/RB/W	145/370	8.7x17.9x26.8	ATX	10/0	1/0	300W/300R
565	185	9.25x18.3x21.2	XEON/ATX	4/0	2/4	300W
568	95/110	13.5x17.8x14	BIATX	5/0	2/4	250W/300W
568B/W	210	13.5x17.8x14	BIATX	6/2	0/8	300W/300R
570/R	150/370	8.3x17.3x26.4	ATX	7/1	1/2	300W/300R
571/R	160/370	8.3x17.3x26.4	ATX	6/1	1/2	300W/300R
582	105/120	7.8x16.5x23.2	ATX	6/0	2/1	250W/300W
588	99/114	7.8x16.5x23.3	FATX2	5/0	1/3	250W/300R
1620/R	950	16.5x20.3x34.3	FATX2	16/0		300/R

Model# Starts with:

- • • Case Color: Blue, Purple, Green, Orange, Red, Black.

5 for FullFile Server Case

Slide Open: Side Panel can be removed independently
Slide Door: Sliding front door up and down
Slide MB plate: Motherboard tray can slide in and out from rear

MB SIZE = MOTHERBOARD SIZE • F= FULL SIZE • B= BABY SIZE

X=ATX • M. ATX= Micro ATX
P= REDUNDANT POWER SUPPLY WITH HARDWARE

H= REDUNDANT POWER SUPPLY WITH HARDSWAP
250XB= Ball Bearing



MODEL / SPECS	Base Bios	Distortion W/D H	I/O ports	5.25"	3.5"	PQ	PQ KSA
105L1PX socket 370	255	12x13x3.1	PS2 KB, mouse; VGA; USB; RJ45; 2S, 1P AUDIO, GAME	1	1/1	3	0r 0
105L1PX TV	175	12x13x3.1	PS2 KB, mouse; VGA; USB; RJ45; 2S, 1P AUDIO; GAME, TV			3	0r 0
109N1LX socket 370	275	12.3x116x3.9	PS2 KB, mouse; VGA; USB; RJ45; 2S, 1P AUDIO; GAME, IR		1/1	2	1
111M1NLX 370	260	11.5x10.6x2.5	PS2 KB, mouse; VGA; USB; RJ45; 2S, 1P AUDIO, GAME, 1394			2	0r 0
192 MATX 370	185	13.8x16.6x3.4	PS2 KB, mouse; VGA; USB; RJ45; 2S, 1P AUDIO; GAME		1/1	3	0r 0
192B MATX 370	185	13.8x16.6x3.4	PS2 KB, mouse; VGA; USB; RJ45; 2S, 1P AUDIO; GAME		1/1	3	0r 0



CASE DEPOT
www.casedepot.com

CaseDepot.com
Get the Right Case
at the Right Price

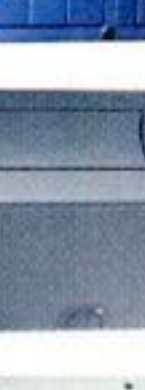
CaseDepot.com

**Get the Right Case
at the Right Price**

4050B Aluminum ATX Side Open
ANTEC C-1230



4920B Aluminum ATX Side Open USB
LIAN-LI C60



5180B ATX Side Open
ANTEC C-1230



4180B ATX Side Open
ANTEC C-1030B



474 Aluminum ATX Side Open USB



478 Aluminum ATX Side Open USB



337 ATX Side Open
IN WIN S50B



5920B Aluminum ATX Side Open USB
LIAN-LI C70



4930B Aluminum ATX Side Open USB
LIAN-LI C61



480 Aluminum ATX Side Open USB



479 Aluminum ATX Side Open USB



ATX 2 BALL BEARING FANS (1 THERMO POWER SUPPLY MEETS AMD & 2.03 COMPLIANCE (P4 READY/ AMD Certified))

ATX	Price
350W	75
430W	115
550W	220

ATX 230-400W



SS 230-400W



ATX 230-600W



MACHINE 145W P.S. \$30.00



All ATX P.S. is 2.01 Compliance ATX P.S.

ATX SIZE (8 3/8 x 6 x 5 7/8) SS SIZE (6x5 1/2x3 3/8)

Price	ATX	SS	AT/ATT
250W	30	38	45
300/350W	50/65	53	65
400W	110	110	110
500W	N/A	N/A	210
600W	N/A	N/A	280

Price	ATX	SS	AT/ATT
250W	30	38	45
300/350W	50/65	53	65
400W	110	110	110
500W	N/A	N/A	210
600W	N/A	N/A	280

ALL ATX P.S. is 2.01 Compliance ATX P.S.
ATT SIZE (8 3/8 x 6 x 5 7/8) SS SIZE (6x5 1/2x3 3/8)
ATX 2 BALL BEARING FANS (1 THERMO)
POWER SUPPLY MEETS AMD & 2.03
COMPLIANCE (P4 READY/AMD Certified)

Price	ATX	SS	AT/ATT
350W	20	20	45

ATX	Price
350W	75

250W	30	38	43	48	53	58	63	68	73	78	83	88	93	98	103	108	113	118	123	128	133	138	143	148	153	158	163	168	173	178	183	188	193	198	203	208	213	218	223	228	233	238	243	248	253	258	263	268	273	278	283	288	293	298	303	308	313	318	323	328	333	338	343	348	353	358	363	368	373	378	383	388	393	398	403	408	413	418	423	428	433	438	443	448	453	458	463	468	473	478	483	488	493	498	503	508	513	518	523	528	533	538	543	548	553	558	563	568	573	578	583	588	593	598	603	608	613	618	623	628	633	638	643	648	653	658	663	668	673	678	683	688	693	698	703	708	713	718	723	728	733	738	743	748	753	758	763	768	773	778	783	788	793	798	803	808	813	818	823	828	833	838	843	848	853	858	863	868	873	878	883	888	893	898	903	908	913	918	923	928	933	938	943	948	953	958	963	968	973	978	983	988	993	998	1003	1008	1013	1018	1023	1028	1033	1038	1043	1048	1053	1058	1063	1068	1073	1078	1083	1088	1093	1098	1103	1108	1113	1118	1123	1128	1133	1138	1143	1148	1153	1158	1163	1168	1173	1178	1183	1188	1193	1198	1203	1208	1213	1218	1223	1228	1233	1238	1243	1248	1253	1258	1263	1268	1273	1278	1283	1288	1293	1298	1303	1308	1313	1318	1323	1328	1333	1338	1343	1348	1353	1358	1363	1368	1373	1378	1383	1388	1393	1398	1403	1408	1413	1418	1423	1428	1433	1438	1443	1448	1453	1458	1463	1468	1473	1478	1483	1488	1493	1498	1503	1508	1513	1518	1523	1528	1533	1538	1543	1548	1553	1558	1563	1568	1573	1578	1583	1588	1593	1598	1603	1608	1613	1618	1623	1628	1633	1638	1643	1648	1653	1658	1663	1668	1673	1678	1683	1688	1693	1698	1703	1708	1713	1718	1723	1728	1733	1738	1743	1748	1753	1758	1763	1768	1773	1778	1783	1788	1793	1798	1803	1808	1813	1818	1823	1828	1833	1838	1843	1848	1853	1858	1863	1868	1873	1878	1883	1888	1893	1898	1903	1908	1913	1918	1923	1928	1933	1938	1943	1948	1953	1958	1963	1968	1973	1978	1983	1988	1993	1998	2003	2008	2013	2018	2023	2028	2033	2038	2043	2048	2053	2058	2063	2068	2073	2078	2083	2088	2093	2098	2103	2108	2113	2118	2123	2128	2133	2138	2143	2148	2153	2158	2163	2168	217
------	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-----

400W	110	110	110	110
500W	N/A	N/A	210	210
600W	N/A	N/A	280	280

			
---	---	---	---

[illegible]

PLEASE CALL

Tech Support & Information:

TEL: 562-404-9725 • FAX: 562-404-8525

Business Hours: M-F 8:30-5:00

We honor:   

sales@casedepot.com • support@casedepot.com

Our Website has a much more then what's listed here www.csg2000.com

Memory

DDR SDRAM PC2100 (266) by Micron
128 megs \$36.25 with ECC \$38.10
256 megs \$70.80 with ECC \$79.20

RamBus RDRAM by Samsung
128 meg 800 MHz \$48 with ECC \$57
256 meg 800 MHz \$94 with ECC \$106

SDRAM 168 pin dimms by Micron
PC-133 PC-100 PC-66(not
64 megs \$16 \$15 \$20 Micron)
128 megs \$24 \$24 \$33
256 megs \$42 \$38
512 megs \$82 \$88

Check website for current pricing

AMD Athlon Bare Bones Systems



AMD K7 Thunderbird Bare Bones Systems

Specifications:
FIC AZ11-EA Motherboard, Socket A
Mid Tower ATX Case w/ 300 watt power supply
AMD Processor of your choice below
Cooler Master Extra Lagre Heatsink and Cooling Fan
System is assembled and burned in for 48 hours

AMD Duron 900 MHz. - 200 FSB \$222
AMD T-Bird 1 GHz. - 266 FSB \$286
AMD T-Bird 1.2 GHz. - 266 FSB \$302
AMD T-Bird 1.3 GHz. - 266 FSB \$314
AMD T-Bird 1.4 GHz. - 266 FSB \$340
***Check website for current prices

Motherboards

Huge selection of Motherboards, Check Website

Socket 370 Motherboards for Intel
(Pentium III and Celeron)
Asus TUSL2-C i815 AGP4x, ATX, \$124
Asus TUA266, SDRAM & DDR \$114
Tyan S2080, Intel 815EP chip \$ 95
Abit VP6, Via chip, U100, Raid, \$156

Socket A Motherboards for AMD
(AMD Athlon XP / Thunderbird / Duron)
Asus A7M266, DDR, 266, AGP4x \$163
Asus A7V266-E, DDR, 266, via, \$189
Tyan S2390B, VIA, U100 \$101
Abit KG7 Raid, DDR, Raid, VIA \$168
Abit KR7A-Raid, DDR, Raid 133 \$196
Abit KT7ARA, Raid U100, AGP4x \$128
FIC AZ11-EA, 266FSB, U100 \$87
FIC AD11XP, 266FSB, via, U100 \$108
Gigabyte 7VTXH, DDR, 266, U100 Lan \$123
Microstar K7T-266R, DDR266, Raid, \$125
Microstar K7N420P, NForce, video, \$196
Soyo K7V Dragon+, DDR, lan, 266 \$169

Pentium 4 Motherboards Socket 478
Abit BL7, i845, SDRAM, U100 \$144
Intel D845WN, SDRAM, i845, \$136
Intel D850MV, i850 chip, RIMM, \$162
Asus P4BSWA, i845, SDRAM, \$169
Soyo P4ISR, SDRAM i845, Raid, \$168
Tyan S2266, VIA chip, DDR mem \$108



Processors

Intel P4 - Socket 478
P4 2.0G \$540 Boxed
P4 1.9G \$326 Boxed
P4 1.8G \$289 Boxed
P4 1.7G \$251 Boxed
P4 1.6G \$232 Boxed
P4 1.5G \$225 Boxed
Intel PIII - Socket 370
P3 1.0 GHz \$168
P3 933 MHz. \$163
P3 866 MHz. \$161
P3 850 MHz. \$163
P3 800 MHz. \$145

Processor Cooling
Heatsink Fan Units
CoolerMaster #DP5-
6i31c \$18, fits all
Socket A, 370, 7.
Approved by AMD and
Intel

AMD Athlon XP
1900+ \$282
1800+ \$242
1700+ \$181
1600+ \$147
1500+ \$140
AMD Athlon T-Bird
1.4G 266FSB \$129
1.3G 266FSB \$118
1.2G 266FSB \$112
1.0G 266FSB \$96
950 MHz. \$76
900 MHz. \$69
850 MHz. \$68
AMD Duron
1.1 GHz. \$88
1.0 GHz. \$74
950 MHz. \$64
900 MHz. \$56
850 MHz. \$52
800 MHz. \$51

Video Cards

Huge selection of video cards, check website

Elsa Gladiac 920 Geforce3 64 meg \$399
Leadtek Geforce 3 Titanium 64 meg \$275
Asus V7100 Geforce2 MX 32 mg \$107 w/64mg \$126
Asus V7700 Geforce2 32meg Delx \$175
Jaton Geforce2 MX-200 32 meg \$60, MX 400 \$82
Elsa Gladiac 511 Geforce2 MX400 64 meg \$104
ATI Radeon 8500 64mg, DDR, Dual heads \$ 239
Jaton NVIDIA TnT-2 32 meg \$48

Hard Drives

Huge selection of hard drive, check website

Western Digital 20 gig U100 7200, \$92
Western Digital 30 gig U100 7200, \$114
Maxtor 20 gig U100 7200 rpm, \$98
Maxtor 40 gig U-100 7200 rpm, \$132
Maxtor 100 gig U100 5400 rpm \$299
IBM 20 gig U100 7200 rpm, \$ 103
IBM 40 gig U100 7200 rpm, \$128
Seagate 20 gig U100 7200 rpm, \$93
Seagate 40 gig U100 7200 rpm \$116
Seagate 60 gig U100 7200 rpm \$147
Promise Ultra 100 TX2 Controller Card PCI \$39
Promise Fast Trak 100 TX2 raid/mirror card \$88

AMD Athlon XP Bare Bones w/Extras



AMD Athlon XP CPU 266 bus
Cooler Master Heatsink fan unit
ASUS A7M266 Motherboard w/DDR support
256 meg DDR SDRAM PC-2100 by Micron
NVIDIA Geforce2-MX200 32 meg AGP Video
Card
Teac 3 1/2 Inch floppy drive
Mid Tower Case with 300 watt power supply
System is assembled and burned in for 48 hours
AMD Athlon XP 1600+ \$512
AMD Athlon XP 1700+ \$541
AMD Athlon XP 1800+ \$603
AMD Athlon XP 1900+ \$680
***Check web for current price

Computer Services Group - www.csg2000.com

1-800-798-1880

Fax 949-646-7029

Shipping/Mailing address: 1927 Harbor Blvd. #395, Costa Mesa, CA 92627

30 day return period for refunds from purchase date, after 30 days only warranty exchange,
no returns on software. All returns require an RMA # please email or go to our website to get
an RMA #, shipping is non refundable, complete return policy can be found on our website.

MEMORY

DESKTOP-LAPTOP-CAMERA-PRINTER

WE CAN BEAT ANY PRICE, ANYWHERE

CALL AROUND...THEN CALL US!!!

"NOBODY CAN BEAT US...NOBODY"

LIFETIME WARRANTY-NEVER A RE-STOCKING FEE

1-800-4-MEMORY

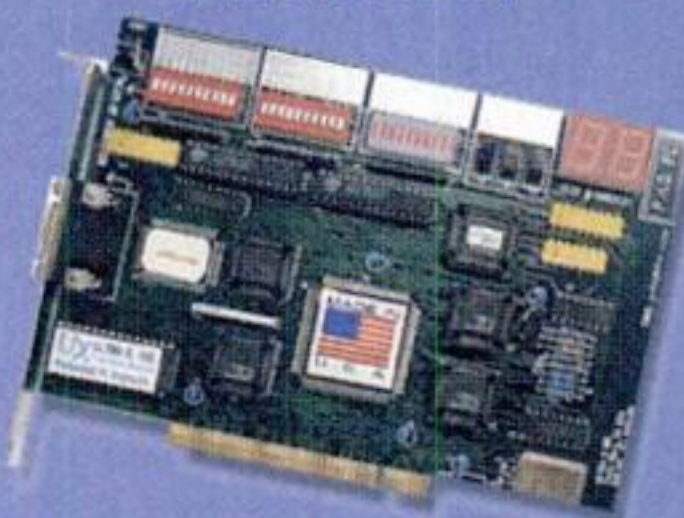
WWW.18004MEMORY.COM

ADVERTISE IN THE
MAXIMUM PC
MARKETPLACE AND
WATCH YOUR SALES
SKY ROCKET!

FOR MARKETPLACE
SALES CONTACT
SHARON KIERNAN
(781) 416-2018



P.H.D. PCI



Like no other.



www.uxd.com

One Tool for all your needs.

When plugged into a PCI slot on your motherboard, the P.H.D. PCI tester can diagnose everything from motherboard problems to power supply fluctuations. An extended diagnostic mode tests the system board, IDE & ATAPI devices, I/O ports, and memory including the latest DDR, RAMBUS, and PC-133 memory.

**Quick. Simple.
Accurate.**

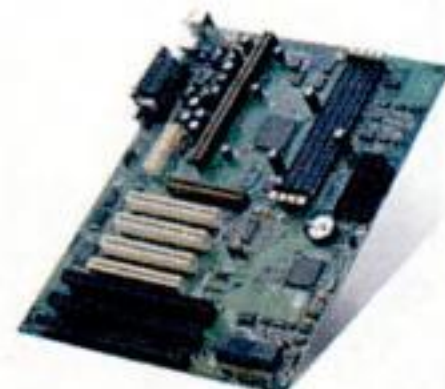
For more information regarding
our product line, contact a sales
representative today!



1-888-722-3734

FAX: 1-909-946-7639
Email: sales@uxd.net

Boot a DEAD board
in less than
5 Minutes...



without a BIOS or RAM.

Features

Fully Automated
O/S Independent Self Booting
Boots DEAD Boards
Burn-In Testing
System Board Testing
Critical RAM Testing
IDE/ATAPI Testing
LPT, COM, & USB Port Testing

Testimonials

"PHD PCI's reliability, accuracy, and ease of use persuaded us to include it as a major component of our validation test procedure."
-Intel Corp.

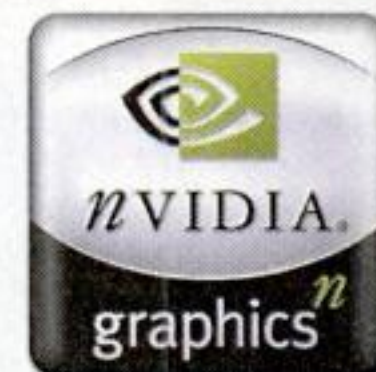
"Your products make the job of testing systems almost a pleasure"
-GTE Corp.

Providing Diagnostics to:

intel. AMD. IBM. Gateway.
COMPAQ. SONY



**Extreme
Performance
for Windows XP**



\$399

BARGAIN AMD

- (www.ibuypower.com/product-pc/bargain.htm)
- 256MB PC133 SDRAM
upgrade: 512MB PC133 SDRAM @ \$39
 - 40GB Ultra DMA Hard Drive
upgrade: 60GB Ultra DMA Hard Drive @ \$45
 - 16x DVD-ROM Drive
 - Integrated 8M Video & 3D Sound
 - 56K V.90 Fax/Modem w/Voice
 - 10/100 Network Build-in
 - 480 Watt PMPO Subwoofer Speaker System
 - Win98 Keyboard & Scrolling Internet Mouse
 - One Year On-Site Warranty - add \$39
 - MS Windows XP Home or ME Edition - add \$89
 - 17" Digital SVGA Monitor, .27mm - add \$155
 - 100MB Internal ZIP Drive - add \$49
 - IEEE-1394 PROCOMP Fire Wire Card - add \$29

AMD DURON	900	\$ 399	(bgsp021)
AMD DURON	1000	\$ 409	(bgsp022)
AMD DURON	1200	\$ 429	(bgsp023)

\$729

AMD BEST BUY

- VIA KT-133A UDMA-100 4x AGP MB
- 512MB PC133 SDRAM
- 60GB Ultra DMA-100 Hard Drive
upgrade: 80GB Ultra DMA-100 HDD @ \$59
- 56x CD-ROM Drive
upgrade: 16x DVD-ROM @ \$35
- 24x10x40 CD-RW Drive @ \$75
- 32MB nVidia Riva TNT2 M64 4x AGP Video
- AC97 Stereo 3D Sound
upgrade: Sound Blaster Live! Value 5.1 @ \$39
- 56K V.90 Fax/Modem w/Voice
- 17" Digital SVGA Monitor, .27mm
upgrade: 19" Digital SVGA Monitor, .26mm @ \$69
- 480 Watt PMPO Subwoofer Speaker System
upgrade: 7 Pieces Surround Speakers @ \$25
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- MS Windows XP Home or ME Edition CD
- One Year On-Site Warranty - add \$39

AMD Athlon™ XP Processor	
1600+ with QuantiSpeed™ architecture	\$ 729 (abbsp021)
1700+ with QuantiSpeed™ architecture	\$ 739 (abbsp022)
1800+ with QuantiSpeed™ architecture	\$ 775 (abbsp023)
1900+ with QuantiSpeed™ architecture	\$ 825 (abbsp024)
2000+ with QuantiSpeed™ architecture	\$ 915 (abbsp025)

\$1045

DVD PRO

- VIA KT-133A UDMA-100 4x AGP MB
- 1024 MB PC133 SDRAM
- 60GB Ultra DMA-100 Hard Drive
upgrade: 100GB Ultra DMA-100 HDD @ \$129
- 24x10x40 CD-RW Drive
- 16x DVD-ROM Drive
- 64MB nVidia GeForce-2 MX400 4x AGP Video
- Sound Blaster Live! Value 5.1 Sound Card
upgrade: Sound Blaster Audigy Gamer @ \$69
- 56K V.90 Fax Modem w/Voice
- 19" Digital SVGA Monitor, .26mm
- PS2 Win98 Keyboard & Scrolling Internet Mouse
upgrade: MS Optical Intelli-Mouse @ \$27
- 7 Pieces 1000 Watt Surround Sound Speaker
- MS Windows XP Home Edition CD
- Free COREL Office 2002 CD
- One Year On-Site Warranty - add \$39

AMD Athlon™ XP Processor	
1600+ with QuantiSpeed™ architecture	\$ 1045 (drsp021)
1700+ with QuantiSpeed™ architecture	\$ 1055 (drsp022)
1800+ with QuantiSpeed™ architecture	\$ 1089 (drsp023)
1900+ with QuantiSpeed™ architecture	\$ 1139 (drsp024)
2000+ with QuantiSpeed™ architecture	\$ 1229 (drsp025)

\$1519

NIGHT DREAMER

- DDR 266FSB UDMA-100 Main Board
- <BLACK> ANTEC Mid Tower Case
- 512MB DDR PC2100 SDRAM
- 80 GB Ultra DMA-100 HDD
- 64MB nVidia GeForce-3 Titanium-500 DDR Video
- Sound Blaster Live! Value 5.1 Sound Card
upgrade: S.B. Audigy Platinum @ \$159
- 16x DVD-ROM Drive
- 24x10x40 CD-RW Drive
- IEEE-1394 PROCOMP Fire Wire 3 Ports PCI Card
- 56K V.90 Fax Modem w/Voice
- <BLACK> 19" Digital SVGA Monitor, .26mm
- <BLACK> ALTEC LANSING ACS54 Speakers
- Microsoft Optical Explorer Mouse
- <BLACK> PS2 Win98 Keyboard
- MS Windows XP Home Edition CD
- Free COREL Office 2002 & Norton 2001 CD
- One Year On-Site Warranty - add \$39

AMD Athlon™ XP Processor	
1600+ with QuantiSpeed™ architecture	\$ 1519 (nigsp021)
1700+ with QuantiSpeed™ architecture	\$ 1529 (nigsp022)
1800+ with QuantiSpeed™ architecture	\$ 1565 (nigsp023)
1900+ with QuantiSpeed™ architecture	\$ 1615 (nigsp024)
2000+ with QuantiSpeed™ architecture	\$ 1705 (nigsp025)

\$945

BACK TO SCHOOL

Sep. 2000 and Oct. 2001
Computer Buyer's Guide **BEST BUY AWARDS**
(www.ibuypower.com/product-pc/back-to-school.htm)

- DDR 266FSB UDMA-100 Main Board
- 512MB DDR PC2100 SDRAM
- 80GB Ultra DMA-100 HDD
- 24x10x40 CD-RW Drive
- 64MB nVidia GeForce-2 MX400 AGP Video
- AC97 Stereo 3D Sound
upgrade: S.B. Live Value 5.1 @ \$39
- 56K V.90 Fax Modem w/Voice
- 19" Digital SVGA Monitor, .26mm
- PS2 Win98 Keyboard & Scrolling Internet Mouse
upgrade: MS Optical Intelli-Mouse @ \$27
- 7 Pieces 1000 Watt Surround Sound Speakers
- MS Windows XP Home Edition CD
- Free Corel Office 2002 CD
- One Year On-Site Warranty - add \$39
- 16x DVD-ROM - add \$59

AMD Athlon™ XP Processor	
1600+ with QuantiSpeed™ architecture	\$ 945 (btsp021)
1700+ with QuantiSpeed™ architecture	\$ 955 (btsp022)
1800+ with QuantiSpeed™ architecture	\$ 989 (btsp023)
1900+ with QuantiSpeed™ architecture	\$ 1039 (btsp024)
2000+ with QuantiSpeed™ architecture	\$ 1129 (btsp025)

\$1059

XP PRO

- DDR 266FSB UDMA-100 Main Board
- 512MB DDR PC2100 SDRAM
- 80GB Ultra DMA-100 HDD
upgrade: 100MB UDMA-100 @ \$79
- 24x10x40 CD-RW Drive
- 64MB nVidia GeForce-2 Titanium DDR Video
- Sound Blaster Live! Value 5.1 Sound Card
- 56K V.90 Fax Modem w/Voice
- 19" Digital SVGA Monitor, .26mm
upgrade: 19" ViewSonic E90 .23mm @ \$79
- 19" ViewSonic GS790 .22mm @ \$179
- PS2 Win98 Keyboard & Scrolling Internet Mouse
upgrade: MS Optical Intelli-Mouse @ \$27
- 7 Pieces 1000 Watt Surround Sound Speakers
- MS Windows XP Home Edition CD
- Free Corel Office 2002 CD
- One Year On-Site Warranty - add \$39
- 56x CD-ROM - add \$29

AMD Athlon™ XP Processor	
1600+ with QuantiSpeed™ architecture	\$ 1059 (xosp021)
1700+ with QuantiSpeed™ architecture	\$ 1069 (xosp022)
1800+ with QuantiSpeed™ architecture	\$ 1105 (xosp023)
1900+ with QuantiSpeed™ architecture	\$ 1155 (xosp024)
2000+ with QuantiSpeed™ architecture	\$ 1245 (xosp025)

\$1195

GAMER'S PRO

- (www.ibuypower.com/product-pc/gamer-pro.htm)
- DDR 266FSB UDMA-100 Main Board
 - 512MB DDR PC2100 SDRAM
 - 80GB Ultra DMA-100 HDD
upgrade: 100GB UDMA-100 HDD @ \$79
 - 16x DVD-ROM
 - 24x10x40 CD-RW Drive
 - 64MB nVidia GeForce-3 Titanium-200 DDR Video
upgrade: 64MB GeForce-3Ti-500 @ \$139
 - Sound Blaster Live! Value 5.1 Sound Card
upgrade: Sound Blaster Audigy Gamer @ \$69
 - 56K V.90 Fax Modem w/Voice
 - 19" Digital SVGA Monitor, .26mm
upgrade: 19" ViewSonic E90 .23mm @ \$79
 - ALTEC LANSING AVS500 5 Pieces Speakers
 - Microsoft Intelli Mouse ; PS2 Win98 Keyboard
 - MS Windows XP Home Edition CD
 - Free Corel Office 2002 CD
 - One Year On-Site Warranty - add \$39

AMD Athlon™ XP Processor	
1600+ with QuantiSpeed™ architecture	\$ 1195 (gpsp021)
1700+ with QuantiSpeed™ architecture	\$ 1205 (gpsp022)
1800+ with QuantiSpeed™ architecture	\$ 1240 (gpsp023)
1900+ with QuantiSpeed™ architecture	\$ 1290 (gpsp024)
2000+ with QuantiSpeed™ architecture	\$ 1380 (gpsp025)

\$1405

GAMER'S DREAM

- Apr 2000 PC Gamer Editors' Choice Award
- DDR 266FSB UDMA-100 Main Board
 - 512MB DDR PC2100 SDRAM
 - 80GB Ultra DMA-100 HDD
 - 16x DVD-ROM Drive
 - 24x10x40 CD-RW Drive
 - IEEE-1394 PROCOMP Fire Wire 3 Ports PCI Card
 - 64MB nVidia GeForce-3 Titanium-500 DDR Video
 - Creative Lab Sound Blaster Live! Value 5.1 Sound
upgrade: Sound Blaster Audigy Gamer @ \$69
 - Sound Blaster Audigy Platinum @ \$159
 - 56K V.90 Fax Modem w/Voice
 - 19" ViewSonic E90 .23mm SVGA Monitor
upgrade: 19" ViewSonic GS790 .22mm @ \$80
 - ALTEC LANSING AVS500 5 Pieces Speakers
 - Microsoft Intelli Mouse & PS2 Win98 Keyboard
 - MS Windows XP Home Edition CD
 - Free COREL Office 2002 CD
 - One Year On-Site Warranty - add \$39

AMD Athlon™ XP Processor	
1600+ with QuantiSpeed™ architecture	\$ 1405 (gdsp021)
1700+ with QuantiSpeed™ architecture	\$ 1415 (gdsp022)
1800+ with QuantiSpeed™ architecture	\$ 1450 (gdsp023)
1900+ with QuantiSpeed™ architecture	\$ 1499 (gdsp024)
2000+ with QuantiSpeed™ architecture	\$ 1589 (gdsp025)

iBUYPOWER
(888)462-3899



IEEE-1394 fire wire PCI card 3-port,
400 Mbps max. transfer rate @ \$39



IEEE-1394 fire wire
cardbus PCMCIA
400 Mbps max.
transfer rate @ \$89



IEEE-1394 device bay, for HDD,
CD-ROM, CD-RW... @ \$109

*** AMD Athlon™ XP Processor 1600+ with QuantiSpeed™ architecture outperforms competitive 1.6GHz PC processor. QuantiSpeed™ architecture operates at 1.4GHz.
**** AMD Athlon™ XP Processor 1800+ with QuantiSpeed™ architecture outperforms competitive 1.8GHz PC processor. QuantiSpeed™ architecture operates at 1.5GHz.
***** AMD Athlon™ XP Processor 2000+ with QuantiSpeed™ architecture outperforms competitive 2.0GHz PC processor. QuantiSpeed™ architecture operates at 1.57GHz.

*** AMD Athlon™ XP Processor 1700+ with QuantiSpeed™ architecture outperforms competitive 1.7GHz PC processor. QuantiSpeed™ architecture operates at 1.47GHz.
**** AMD Athlon™ XP Processor 1900+ with QuantiSpeed™ architecture outperforms competitive 1.9GHz PC processor. QuantiSpeed™ architecture operates at 1.60GHz.

Price, Specification and terms are subject to change without notice. Picture may differ from actual products. We are not responsible for errors in typography and/or photography. 30-day money back guarantee does not include opened software, parts, or special order merchandise. Original shipping and handling fee along with return shipping charge are non-refundable. Products returned after 30 days or in a non-refundable condition are subject to a restocking fee. Intel, the Intel Inside Logo and Pentium are registered trademarks, Pentium and Celeron are trademarks of Intel Corporation. All other brands and products name are trademark or registered trademarks of their respective companies. * 3 year limited warranty includes 3 years labor and 1 year parts only.

Copyrighted material



Power System @ Bargain Price

\$749 POCKET EPC-II

- Intel® Celeron® 900MHz (P-III 800/933/1000MHz available)
- Intel® 810E Chipset
- 56K V.90 Modem Built-in
- 10/100 Network Built-in
- 128MB SDRAM(max. 256MB)
- 10GB Hard Drive(max. 30GB)
- 4MB AGP Video Integrated
- 3D Sound Integrated
- 24x CD-ROM & Floppy Drive (optional DVD or CD-RW ROM)
- MS Windows XP or ME CD
- 1-Year Limited Warranty



\$469 HOME PC

- PROCOMP 133Mhz Main Board
- 8MB AGP Video & 3D Stereo Sound
- 256MB PC133 SDRAM
- 40GB UDMA100 HDD
- 17" Digital SVGA .27mm Monitor
- 56x CD-ROM Drive
- 56K V.90 Fax/Modem
- 10/100 Network built-in
- Win98 Keyboard & Scrolling Internet Mouse
- 120 Watts PMPO Stereo Speakers
- One Year On-Site Warranty - add \$39
- MS Windows ME CD - add \$89
- 100MB Internal ZIP Drive - add \$49

Intel® CELERON®	800 Mhz	\$ 469	(hosp021)
Intel® CELERON®	900 Mhz	\$ 489	(hosp022)
Intel® CELERON®	1000 Mhz	\$ 509	(hosp023)



Online System Configurator
& Rush Service Available

6x BEST BUY Awards
in Year 2001

Corporate, School and
Government POs Welcome



Best Buy Award - Dec. 2001, Computer Buyer's Guide & Handbook
Best Buy Award - Oct. 2001, Computer Buyer's Guide & Handbook
Best Buy Award - Jun 2001, Computer Buyer's Guide & Handbook
Best Buy Award - Mar 2001, Computer Buyer's Guide & Handbook
Best Buy Award - Feb 2001, Computer Buyer's Guide & Handbook
Best Buy Award - Jan 2001, Computer Buyer's Guide & Handbook



\$495 WORKSTATION PC

- PROCOMP 133Mhz Main Board
- 256MB PC133 SDRAM
- upgrade: 512MB PC133 SDRAM @ \$29
- 40GB Ultra DMA100 Hard Drive
- upgrade: 60GB Ultra DMA100 Hard Drive @ \$45
- 56x CD-ROM Drive
- upgrade: 16x DVD @ \$35
- 32MB nVidia Riva TNT-2 M64 4x AGP Video
- upgrade: 64MB nVidia GeForce-2 MX400 @ \$39
- 10/100 Network Card
- upgrade: 10/100 3COM Network Card @ \$39
- 17" Digital SVGA .27mm Monitor
- upgrade: 19" SVGA .26mm Monitor @ \$69
- Win98 Keyboard & Scrolling Internet Mouse
- One Year On-Site Warranty - add \$39
- MS Windows XP Home or ME CD - add \$89
- 100MB Internal ZIP Drive - add \$49
- 56K V.90 Fax/Modem - add \$19
- IEEE-1394 PROCOMP Fire Wire Card - add \$29

Intel® CELERON®	800 Mhz	\$ 495	(wosp021)
Intel® CELERON®	900 Mhz	\$ 515	(wosp022)
Intel® CELERON®	1000 Mhz	\$ 535	(wosp023)

\$819 POWER BEST BUY

- INTEL® i850 Chip UDMA-100 Pentium® 4 MB
- 128 MB PC800 RDRAM Memory
- 40GB Ultra DMA-100 HDD
- upgrade: 60GB UDMA-100 HDD @ \$45
- 16x DVD-ROM Drive
- 32MB nVidia Riva TNT-2 M64 Video
- 120 Watt Stereo Speakers
- upgrade: Altec Lansing AVS500 Speakers @ \$45
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- 10/100 INTEL® Ethernet Network Onboard
- 17" Digital SVGA .27mm Monitor
- upgrade: 17" REAL FLAT .24mm Monitor @ \$59
- upgrade: 19" REAL FLAT .22mm Monitor @ \$169
- AC-97 Stereo 3D Sound
- upgrade: S.B. Live Value 5.1 Sound Card @ \$39
- 56K V.90 Modem w/Voice
- MS Windows XP Home Edition CD
- One Year On-Site Warranty - add \$39

Intel® Pentium® 4	1.6 GHZ	\$ 819	(pbbp021)
Intel® Pentium® 4	1.7 GHZ	\$ 839	(pbbp022)
Intel® Pentium® 4	1.8 GHZ	\$ 879	(pbbp023)
Intel® Pentium® 4	2.0 GHZ	\$ 1099	(pbbp024)

\$839 VALUE PERFORMER

- INTEL® i845 Chip 400FSB UDMA-100 P-4 MB
- 512 MB PC133 SDRAM Memory
- 40GB Ultra DMA-100 HDD
- upgrade: 80GB UDMA-100 HDD @ \$99
- 16x DVD-ROM Drive
- 32MB nVidia GeForce-2 MX200 Video
- upgrade: 64MB GeForce-2 MX400 @ \$25
- 480 Watt PMPO Subwoofer Speaker System
- upgrade: 7 Pieces Surround Speakers @ \$25
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- 10/100 INTEL® Ethernet Network Onboard
- 17" Digital SVGA .27mm Monitor
- upgrade: 17" ViewSonic E70 .24mm @ \$59
- upgrade: 19" ViewSonic E90 .23mm @ \$139
- AC-97 Stereo 3D Sound
- upgrade: S.B. Live Value 5.1 Sound Card @ \$39
- 56K V.90 Fax Modem w/Voice
- MS Windows XP Home Edition CD
- One Year On-Site Warranty - add \$39

Intel® Pentium® 4	1.6 GHZ	\$ 839	(vasp021)
Intel® Pentium® 4	1.7 GHZ	\$ 859	(vasp022)
Intel® Pentium® 4	1.8 GHZ	\$ 899	(vasp023)
Intel® Pentium® 4	1.9 GHZ	\$ 935	(vasp024)
Intel® Pentium® 4	2.0 GHZ	\$ 1115	(vasp025)
Intel® Pentium® 4	2.2 GHZ	\$ 1215	(vasp026)

\$1099 CHARISMA PC

- INTEL® i845 Chip 400FSB UDMA-100 P-4 MB
- 1024 MB PC133 SDRAM Memory
- 60GB Ultra DMA-100 HDD
- 16x DVD-ROM Drive
- 24x10x40 CD-RW Drive
- 64MB nVidia GeForce-2 MX400 Video
- AC-97 Stereo 3D Sound
- upgrade: Sound Blaster Audigy Gamer @ \$99
- 56K V.90 Fax Modem w/Voice
- 10/100 INTEL® Ethernet Network Onboard
- 19" Digital SVGA Monitor .26mm
- upgrade: 19" ViewSonic E90 .23mm @ \$79
- Altec Lansing AVS-500 5 Pieces Speaker System
- PS/2 Mouse & Win98 Keyboard
- MS Windows XP Home Edition CD
- Free COREL Office 2002 CD
- One Year On-Site Warranty - add \$39

Intel® Pentium® 4	1.6 GHZ	\$ 1099	(chsp021)
Intel® Pentium® 4	1.7 GHZ	\$ 1119	(chsp022)
Intel® Pentium® 4	1.8 GHZ	\$ 1159	(chsp023)
Intel® Pentium® 4	1.9 GHZ	\$ 1195	(chsp024)
Intel® Pentium® 4	2.0 GHZ	\$ 1375	(chsp025)
Intel® Pentium® 4	2.2 GHZ	\$ 1475	(chsp026)

\$1425 DREAM 2002

- DDR UDMA-100 4x AGP Pentium® 4 MB
- 512 MB DDR PC2100 SDRAM
- 40GB 7200 rpm Ultra DMA-100 HDD
- upgrade: 60GB 7200 rpm UDMA-100 @ \$45
- 16 DVD-ROM
- 24x10x40 CD-RW Drive
- 64MB nVidia GeForce-3 nFinite DDR Video
- Sound Blaster Audigy Gamer Sound Card
- upgrade: Sound Blaster Platinum Audigy @ \$109
- 56K V.90 Fax Modem w/Voice
- 19" ViewSonic E90 .23mm Color Monitor
- Microsoft Internet Keyboard & Intelli-Mouse
- ALTEC LANSING AVS-500 5 pcs Speakers
- MS Windows XP Home Edition CD
- Free Corel Office 2002 CD
- Free Norton AntiVirus 2002 CD
- One Year On-Site Warranty included

Intel® Pentium® 4	1.6 GHZ	\$ 1425	(dr2sp021)
Intel® Pentium® 4	1.7 GHZ	\$ 1445	(dr2sp022)
Intel® Pentium® 4	1.8 GHZ	\$ 1485	(dr2sp023)
Intel® Pentium® 4	1.9 GHZ	\$ 1515	(dr2sp024)
Intel® Pentium® 4	2.0 GHZ	\$ 1695	(dr2sp025)
Intel® Pentium® 4	2.2 GHZ	\$ 1795	(dr2sp026)

\$949 IBUYPOWER-999

- INTEL® i850 Chip UDMA-100 Pentium® 4 MB
- 512 MB PC800 RDRAM Memory
- 60GB Ultra DMA-100 HDD
- upgrade: 80GB UDMA-100 HDD @ \$59
- 16x DVD-ROM Drive
- 64MB nVidia GeForce-2 Titanium DDR Video
- 480 Watt PMPO Subwoofer Speaker System
- upgrade: Altec Lansing AVS500 Speakers @ \$45
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- 10/100 INTEL® Ethernet Network Onboard
- AC-97 Stereo 3D Sound
- upgrade: S.B. Live Value 5.1 Sound Card @ \$39
- upgrade: S.B. Audigy Gamer Sound @ \$99
- 56K V.90 Modem w/Voice
- MS Windows XP Home Edition CD
- One Year On-Site Warranty - add \$39
- 17" SVGA .27mm Monitor - add \$155
- 19" SVGA .26mm Monitor - add \$225

Intel® Pentium® 4	1.6 GHZ	\$ 949	(ib9sp021)
Intel® Pentium® 4	1.7 GHZ	\$ 969	(ib9sp022)
Intel® Pentium® 4	1.8 GHZ	\$ 999	(ib9sp023)
Intel® Pentium® 4	1.9 GHZ	\$ 1045	(ib9sp024)
Intel® Pentium® 4	2.0 GHZ	\$ 1225	(ib9sp025)
Intel® Pentium® 4	2.2 GHZ	\$ 1325	(ib9sp026)

\$1279 POWER SPECIAL

- (www.ibuypower.com/product-pc/power-special.htm)
- INTEL® i850 Chip UDMA-100 Pentium® 4 MB
- 512 MB PC800 RDRAM Memory
- 80GB Ultra DMA-100 HDD
- upgrade: 100GB UDMA-100 HDD @ \$79
- 16x DVD-ROM Drive
- 24x10x40 CD-Rewritable
- 64MB nVidia GeForce-3 Titanium 200 DDR Video
- 750 Watt PMPO Subwoofer Speaker System
- upgrade: 7 Pieces Surround Speakers @ \$20
- PS2 Win98 Keyboard & Scrolling Internet Mouse
- 10/100 INTEL® Ethernet Network Onboard
- 17" Digital SVGA .27mm Monitor
- AC-97 Stereo 3D Sound
- upgrade: S.B. Live Value 5.1 Sound Card @ \$39
- 56K V.90 Fax Modem w/Voice
- MS Windows XP Home Edition CD
- Free COREL Office 2002 CD
- One Year On-Site Warranty - add \$39

Intel® Pentium® 4	1.6 GHZ	\$ 1279	(pssp021)
Intel® Pentium® 4	1.7 GHZ	\$ 1299	(pssp022)
Intel® Pentium® 4	1.8 GHZ	\$ 1339	(pssp023)
Intel® Pentium® 4	1.9 GHZ	\$ 1369	(pssp024)
Intel® Pentium® 4	2.0 GHZ	\$ 1559	(pssp025)
Intel® Pentium® 4	2.2 GHZ	\$ 1659	(pssp026)

\$1549 GAMER'S SUPREME

- (www.ibuypower.com/product-pc/supreme.htm)
- INTEL® i850 Chip UDMA-100 Pentium® 4 MB
- 512 MB PC800 RDRAM Memory
- 80GB Ultra DMA-100 HDD
- 16x DVD-ROM Drive
- 24x10x40 CD-RW Drive
- 64MB nVidia GeForce-3 Titanium 500 DDR Video
- Sound Blaster Live Value 5.1 Sound Card
- upgrade: S.B. Audigy Platinum @ \$159
- 56K V.90 Fax Modem w/Voice
- 10/100 INTEL® Ethernet Network Onboard
- 19" ViewSonic E90 SVGA Monitor, .23mm
- upgrade: 19" ViewSonic GS790 .22mm @ \$99
- 7 Pieces 1000 Watt Surround Sound Speakers
- PS/2 Mouse & Win98 Keyboard
- MS Windows XP Home Edition CD
- Free COREL Office 2002 CD
- One Year On-Site Warranty - add \$39

Intel® Pentium® 4	1.6 GHZ	\$ 1549	(supsp021)
Intel® Pentium® 4	1.7 GHZ	\$ 1569	(supsp022)
Intel® Pentium® 4	1.8 GHZ	\$ 1609	(supsp023)
Intel® Pentium® 4	1.9 GHZ	\$ 1639	(supsp024)
Intel® Pentium® 4	2.0 GHZ	\$ 1819	(supsp025)
Intel® Pentium® 4	2.2 GHZ	\$ 1919	(supsp026)

Fire wire feel the fire

PROCOMP

www.procomp.com.tw



www.IBUYPOWER.com

(888)462-3899

Sales Hour: Mon ~ Fri 7:30AM-6:00PM, Sat 10AM-3PM PST
602 Monterey Pass Rd., Monterey Park, CA 91754 Tel: (626) 281-8262
Fax: (626) 281-0767 All prices effective on Jan 15, 2002

Rig of the Month

THIS MONTH: Salar Madadi's Grim Bondolero



How would you like to be seated next to this foreboding-looking monster at a LAN party? The chilly breath of imminent doom—that's what awaits hot temperatures that would dare wreak havoc on Salar Madadi's overclocked Duron processor. We had a brief chat with Madadi, an Ontario computer information systems student, to ask him what in God's name he was thinking.

MPC: What's the deal with the crazy skull? I'm not really sure. It looks like it's from one of those models from science class. It didn't have any company markings or anything on it. I got it at a garage sale, and it cost me only a quarter. After I got it, my girlfriend and I put on some music and made the jaw sing the lyrics (laughs).

MPC: Are those real human teeth? They're my baby teeth! No, they're actually plastic, and they came with the skull.

MPC: It looks like you pounded aluminum around the skull. Yes? No? Nope, it's bondo, which is a paste-like material that's used to fix car bodies. It took me forever to mold it onto the skull, and I had to apply at least 20 layers. Then I used my Dremel to carve away the grooves, then sanded it smooth.

MPC: You're not into witchcraft or the occult, are you? Me? Not really. The inspiration came from one of my favorite artists, H.R. Giger. If you haven't seen his art, he was the guy who did the art for the movie *Aliens*.

MPC: What's up with your lights and windows? The lights are blue cold cathodes from BGmicro.com. I was thinking of getting regular auto neons, but these cathodes are brighter and cheaper. The windows are cut from a Lucite sheet I got at a hardware store. I did the window cutouts myself with a Dremel and trimmed them using chrome auto door trim. I chose the triple window shape because it looked good and was unique. I didn't want to have the standard rectangle case window on my case.

MPC: What do you think your next case will look like? Hmmm, how can I put it? It'll look like a techno-organic nightmare. If you've ever seen *Akira*, think about what happened to Tetsuo's arm after he lost it. The new rig will be water-cooled, and I have crazy ideas about how to integrate the water-cooling with the visual aesthetic of the case. It's all in my head now.

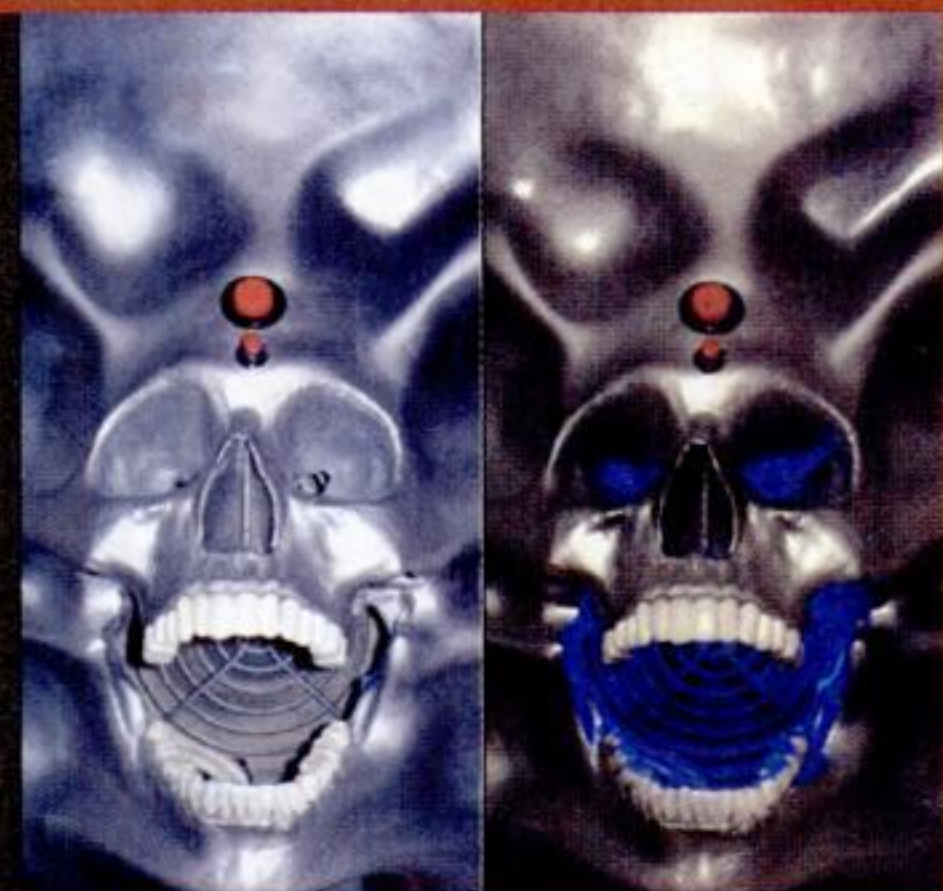
MPC: Hey, two heads are better than one! Stupid joke, sorry.

If you have a contender for Rig of the Month, e-mail input@maximumpc.com with pics and a brief write-up.

With help from Virtual-Hideout.net and FanBus.com, Madadi made a 12v/7v/off baybus so he can quiet or turn off his fans at will. The first six switches control the fans, while the last two control the interior lights. The CompuNurse LCD shows ambient case temperature. Key hardware includes an Abit KT7A-Raid mobo, a 700MHz Duron OC'd to 1GHz, 512MB of PC133, and a Powercolor GF2MX 32MB videocard.



Here are two shots of Madadi's "chilling" figure-head—the first under normal lighting, the second with room lighting turned down, and his blue cathode interior lights turned up. Would any renegade dust dare enter? The big red button handles power on/off, while the small button handles reset. Both were bought at a local electronics store to replace the originals. Madadi's case is an InWin Q500.





Dimension™ 4300S Desktop

Essential Performance, Great Price

- Intel Pentium 4 Processor at 1.60 GHz
- 128MB SDRAM at 133MHz
- 20GB¹ Ultra ATA/100 Hard Drive (7200 RPM)
- 17" (15.9" vis., .27dp) E771 Monitor
- 16MB ATI Rage™ Ultra Graphics Card
- 48X Max CD-ROM Drive
- Integrated Audio
- Harman Kardon® HK-195 Speakers
- 56K² PCI Telephony Modem for Windows®

\$899 or as low as **\$27/mo** for 45 mos.¹²
No payments for 90 days
for qualified customers.
E-VALUE Code: 00840-500108d

Recommended upgrades:

- 256MB SDRAM, add \$80
- 40GB¹ Ultra ATA/100 Hard Drive (7200 RPM), add \$20
- 16X/10X/40X CD-RW Drive with Roxio's Easy CD Creator®, add \$60

Dell | Standard Features

Each DELL system shown here has a number of standard features, including:

- MS® Windows XP Home Edition
- MS Works Suite with MS Money Standard®
- 6 Months DellNet™ by MSN® Internet Access¹⁰
- Dimension Desktops shown here include 1-Yr Limited Warranty;² 1-Yr At-Home Service;⁴ 1-Yr 24x7 Phone Support
- Inspiron Notebooks shown here include 1-Yr Limited Warranty;² 1-Yr Mail-In Service, 1-Yr 24x7 Phone Support



Dimension 4300 Desktop

Superior Performance, Smart Value

- Intel Pentium 4 Processor at 1.70 GHz
- 128MB SDRAM at 133MHz
- 40GB¹ Ultra ATA/100 Hard Drive (7200 RPM)
- 17" (15.9" vis., .27dp) E771 Monitor
- 16MB ATI Rage Ultra Graphics Card
- 48X Max CD-ROM Drive
- 16X/10X/40X CD-RW Drive with Roxio's Easy CD Creator
- SB Live! 1024V Digital Sound Card
- Harman Kardon HK-195 Speakers
- 56K² PCI Telephony Modem for Windows

\$1099 or as low as **\$33/mo** for 45 mos.¹²
No payments for 90 days
for qualified customers.
E-VALUE Code: 00840-500110d

Recommended upgrades:

- 256MB SDRAM, add \$80
- 19" (18.0" vis., .26dp) M991 Monitor, add \$140
- Harman Kardon HK-395 Speakers with Subwoofer, add \$30



Dimension 8200 Desktop

Cutting Edge Technology

- Intel Pentium 4 Processor at 1.80 GHz
- 256MB PC800 RDRAM
- 40GB¹ Ultra ATA/100 Hard Drive (7200 RPM)
- 17" (15.9" vis., .27dp) E771 Monitor
- 64MB NVIDIA GeForce2 MX Graphics Card with TV-Out
- 16X Max DVD-ROM Drive
- 16X/10X/40X CD-RW Drive with Roxio's Easy CD Creator
- SB Live! 1024V Digital Sound Card
- Harman Kardon HK-395 Speakers with Subwoofer
- 56K² PCI Telephony Modem for Windows

\$1499 or as low as **\$45/mo** for 45 mos.¹²
No payments for 90 days
for qualified customers.
E-VALUE Code: 00840-500114a

Recommended upgrades:

- 15" (15.0" vis.) 1503FP Digital Flat Panel Display, add \$310
- Turtle Beach® Santa Cruz™ DSP Sound Card, add \$40
- 2nd bay 24X/10X/40X CD-RW Drive with Roxio's Easy CD Creator, add \$40

Dell | Solutions

Software and Accessories

Printers:

- Epson® Stylus C80 Color Printer, \$179
- Lexmark™ X83 All in One Print Center Scans, Prints and Copies, \$199
- HP® Office Jet PSC-950 Print Center \$349 after \$50 Mail-in rebate (reg. \$399)³⁸

Scanners:

- HP ScanJet 4400Cse \$99 after \$50 Mail-in-rebate (reg. \$149)³⁹
- HP ScanJet 4470Cse \$149 after \$50 Mail-in-rebate (reg. \$199)³⁹

Cameras:

- HP Photosmart 318 Digital Camera \$149 after \$50 Mail-in-rebate (reg. \$199)³⁹
- Kodak® DX3600, \$379, Camera Dock, \$79
- Nikon® 885 Cool Pix, \$599

Service and Support

How about some peace of mind to accompany your new Dell™ system?

Dimension Desktop Service Upgrades:

- Upgrade Dimension™ Desktops with 1-Yr Ltd Warranty;² 1-Yr At-Home Service;⁴ 1-Yr 24x7 Phone Support to: 3-Yr Ltd Warranty;² 3-Yr At-Home Service⁴ and Lifetime 24x7 Phone Support, add \$119 (4300S and 4300) or add \$139 (8200)

Inspiron Notebook Service Upgrades:

- Upgrade Inspiron™ Notebooks with 1-Yr Ltd Warranty;² 1-Yr Mail-In Service, 1-Yr 24x7 Phone Support to: 3-Yr Ltd Warranty;² 3-Yr Next-Business-Day On-Site Service;⁴ Lifetime 24x7 Phone Support, add \$219

Everything you'd ever want in a PC starts right here. Whether you're looking for high-performance multimedia to take on the road, or a versatile desktop that's perfect for home, Dell can custom-build a solution that is just right for you. And by making PCs to order and shipping direct instead of using a middleman retailer, Dell is able to give you the very latest technology at a low price, all backed by an award-winning service and support team that knows your PC like it's their own. So go online or call today, and discover a better way of finding, buying, and owning the perfect computer. A better way that's easy.



Easy to buy. Easy to own. Easy as **DELL**

Order the easy way. Visit www.dell4me.com or call toll free 1-800-999-7882.

means 1 billion bytes; accessible capacity varies with operating environment. ¹Download speeds limited to 53Kbps. Upload speeds are less (about 30Kbps) and vary by modem manufacturer and online conditions. Analog phone line and compatible server required. ¹²Monthly payment based on 13.99% APR FOR QUALIFIED CUSTOMERS. OFFER VARIES BY CREDITWORTHINESS OF CUSTOMER AS DETERMINED BY LENDER. Under 90 Days Same As Cash feature, interest accrues during first 90 days if balance not paid within 90 days. Customers not eligible for 90 Days Same As Cash feature may be offered standard 48-month financing with APRs ranging from 16.99% to 26.99%. Example: \$1650 purchase price, at 19.99%, 48 monthly payments at \$51. Taxes and shipping charges extra and vary. From CIT Online Bank to U.S. residents with approved credit. ³⁸For rebate details and coupons, call 800-728-9665 for HP. System and monitor purchase may be required for rebate. ³⁹Up to 11MB of system memory may be used to support integrated graphics. Intel, Intel Inside, Pentium and Celeron are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. MS, Microsoft, MSN and Windows are registered trademarks of Microsoft Corporation. Dell cannot be responsible for errors in typography or photography. ©2001 Dell Computer Corporation. All rights reserved.



Keep your E-VALUE CODE handy! It's the easiest way to find and build your perfect PC – at the lowest price – when you decide to order.

You could get a more powerful multimedia PC.
You just couldn't get it out of the house.



Go online or call for
our latest promotions.

Dell | Home

Inspiron™ 8100 Notebook

The Ultimate MultiMedia Notebook

- Mobile Intel® Pentium® III Processor at 1.20GHz-M featuring Intel® SpeedStep™ Technology
- 15" Super XGA+ TFT Display
- 256MB SDRAM at 133MHz
- 20GB* Ultra ATA Hard Drive
- Fixed Internal 8X Max DVD-ROM Drive
- 16MB DDR NVIDIA® GeForce2 Go® 4X AGP 3D® Video
- Sound Blaster® Compatible Sound with Wavetable
- 59Whr Li-Ion Battery with ExpressCharge™ Technology
- Internal V.90/56K® Modem and 10/100 Fast Ethernet Mini PCI Combo
- MS® Windows® XP Home Edition, MS® Works Suite
- 1-Yr Limited Warranty; 1-Yr Mail-In Service, 1-Yr 24X7 Phone Support
- 6 Months of DellNet™ by MSN® Internet Access¹⁰

\$1959

Ask us about no payments for
90 days for qualified customers.

E-VALUE Code: 00839-800119m

Recommended upgrades:

- 384MB SDRAM, add \$199
- 2nd Bay 8X CD-RW Drive, add \$179



Welcome to the ultimate road show. I'll lay it all on the line right now: I'm the most complete multimedia package ever offered in a notebook. I am the Dell Inspiron 8100, and I'm a wonder of portable technology. From graphics capability to storage capacity, I'm top of the line. And since I'm customizable to suit your needs, I'll always be perfect for exactly what you want me to do. So go online or call today, and find out how easy it is to take desktop performance anywhere.



Mobile multimedia power. Easy as **DELL**

Order the easy way. Visit www.dell4me.com or call toll free **1-800-999-7882**.

Dell PCs use genuine Microsoft® Windows®
www.microsoft.com/piracy/howtotell

¹⁰Telephone access (call your phone co. for details) and other surcharges for access may apply. Must register within 30 days of invoice and accept DellNet/MSN Terms of Service. You agree to be billed monthly fees after the initial service period. You may cancel service at any time. Offer valid for new customers only in U.S. households and must be over 18 years old with major credit card. Limited time offer.

Prices, specifications and availability may change without notice. Taxes and shipping charges extra, and vary. Valid for U.S. Dell Home Systems Co. new purchases only. *For a copy of our guarantees or Limited Warranties, write Dell USA LP, Attn: Warranties, One Dell Way, Round Rock, Texas 78682. *For hard drives, GB means 1 billion bytes; accessible capacity varies with operating environment. *Download speeds limited to 53Kbps. Upload speeds are less (about 30Kbps) and vary by modem manufacturer and online conditions. Analog phone line and compatible server required. Intel, Intel Inside, Pentium and Celeron are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. MS, Microsoft, MSN and Windows are registered trademarks of Microsoft Corporation. Dell cannot be responsible for errors in typography or photography. © 2001 Dell Computer Corporation. All rights reserved.

You want cutting edge?
I hope your chair has a seatbelt.

Go online or call for
our latest promotions.

Dell | Home

Dimension™ 8200 Desktop

Cutting-Edge Technology

- Intel® Pentium® 4 Processor at 1.9GHz
- 256MB PC800 RDRAM
- 40GB* Ultra ATA/100 Hard Drive (7200RPM)
- 19" (18.0" vis., .26dp) M991 Monitor
- 64MB DDR NVIDIA® GeForce3 Ti 200 Graphics Card with DVI
- 16X Max DVD-ROM Drive
- 24X/10X/40X CD-RW Drive with Roxio's Easy CD Creator®
- Turtle Beach® Santa Cruz™ DSP Sound Card
- Harman Kardon® HK-695 Surround Sound Speakers with Subwoofer
- 56K® PCI Telephony Modem for Windows®
- 3Com® 10/100 PCI Ethernet Network Card
- MS® Windows XP Home Edition, MS Works Suite
- 1-Yr Limited Warranty; 1-Yr At-Home Service; 1-Yr 24x7 Phone Support
- 6 Months of DellNet™ by MSN® Internet Access¹⁰

\$1899

Ask us about no payments for
90 days for qualified customers.
E-VALUE Code: 00838-500118a

Recommended upgrades:

- NEW 64MB DDR NVIDIA GeForce3 Ti500 Graphics Card with TV-Out and DVI, add \$210
- 3-Yr Limited Warranty; 3-Yr At-Home Service; Lifetime 24x7 Phone Support, add \$139



Feel the need for speed? How about owning one of the world's fastest PCs. With an Intel® Pentium® 4 Processor and dual channel RDRAM, I've got more

power than you've ever seen. Whether it's mind-blowing 3D graphics, live video or real-time audio you seek, my 1.9GHz processor will satisfy your needs. And it all comes with my award-winning service and support team. So go online or call today. I'll show you how easy it is to build a computer that will make your heart skip a beat.



Unparalleled desktop performance. Easy as **DELL**

Order the easy way. Visit www.dell4me.com or call toll free 1-800-999-7882.

Dell PCs use genuine Microsoft® Windows®
www.microsoft.com/piracy/howtotell

¹⁰Telephone access (call your phone co. for details) and other surcharges for access may apply. Must register within 30 days of invoice and accept DellNet/MSN Terms of Service.